NORTH CAROLINA Medical Journal

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March, 1950

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PROGRAM OF ANNUAL MEETING — Page 155

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Table of Contents, Page 11

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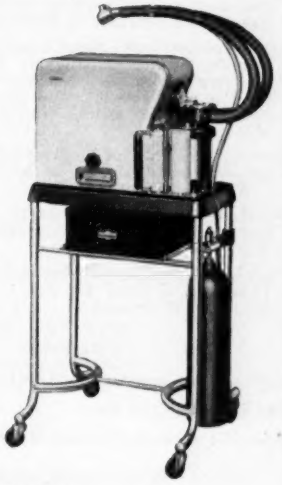

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CONTENTS

ORIGINAL ARTICLES

Rheumatic Heart Disease in Northwest North Carolina—Robert L. McMillan, M.D. and Carl C. Jones, M.D. 105

Should Carcinoma of the Breast Be Treated by Simple or Radical Mastectomy?—W. Ralph Deaton, Jr., M.D., and H. H. Bradshaw, M.D. 110

The Diagnosis of Malignant Melanoma of the Eye—Winston Roberts, M.D. 112

Cerebral Angiography—Eben Alexander, Jr., M.D. and Peter H. Dillard, M.D. 116

What Does the Family Physician Expect from a Specialist?—Clyde T. Hardy, Jr. . . . 122

Complete Heart Block with a Ventricular Rate of Seventy after Myocardial Infarction: Report of a Case Showing All Degrees of Heart Block—Richard S. Pollitzer, M.D. . 124

Acute Nonobstructive Renal Insufficiency with Unusual Electrocardiographic Findings: Recovery Following Fluid Restriction and the Use of Intravenous Procaine—Frank B. Gross, Jr., M.D. and C. Warren Irvin, Jr., M.D. 128

Ascites Probably Due to Rupture of a Pancreatic Pseudocyst: Report of Two Cases —Wingate M. Johnson, M.D. 133

Pityriasis Rosea: Report of Atypical Case with Systemic Manifestations—George W. James, M.D. 137

Thumbnail Sketches of Eminent Physicians: Physicians of North Carolina. II. Hugh Williamson 139

EDITORIALS

Medical Care Insurance for Low Income Groups 142

The Bowman Gray Issue 144

Scientific Aspects of Snake Handling . . . 144

CLINICOPATHOLOGIC CONFERENCE

Bowman Gray School of Medicine of Wake Forest College 145

COMMITTEES AND ORGANIZATIONS

Committee on Venereal Disease: A New Dawn in Venereal Disease Control—H. H. Henry, M.D. 151

CORRESPONDENCE

When Is a Man Dead? 154

BULLETIN BOARD

President's Message: The Annual Meeting . 154

Program of the Ninety-Sixth Annual Session 155

News Notes from the University of North Carolina 158

News Notes from the Duke University School of Medicine 159

News Notes from the Bowman Gray School of Medicine of Wake Forest College 159

North Carolina Mental Hygiene Society . . 160

News Notes from the North Carolina Tuberculosis Association 160

News Notes from the State Board of Health . 160

State Board of Medical Examiners 161

Duke University Medical Alumni Luncheon . 161

The Brodie C. Nalle Lecture 161

Periodical Microfilm Service 161

North Carolina Surgical Association . . . 161

County Societies 164

Announcements 164

AUXILIARY

162

BOOK REVIEWS

163

CLASSIFIED ADVERTISEMENTS

161

INDEX OF ADVERTISERS

XXXV

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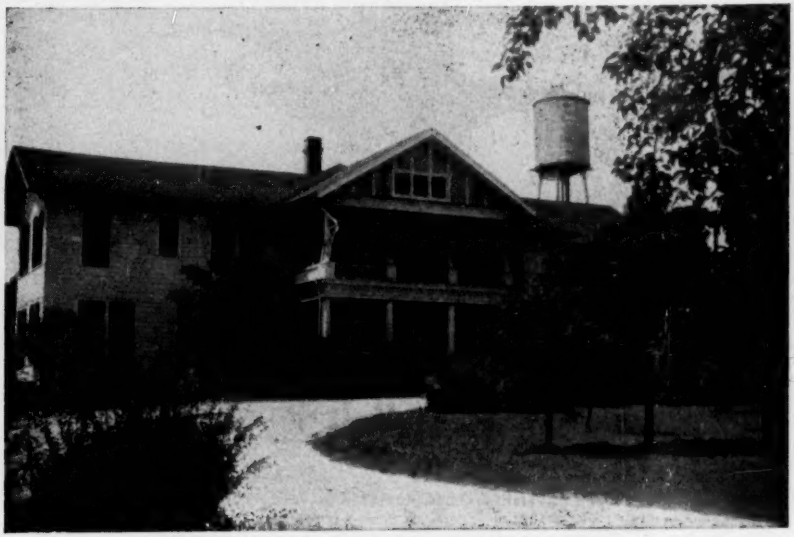

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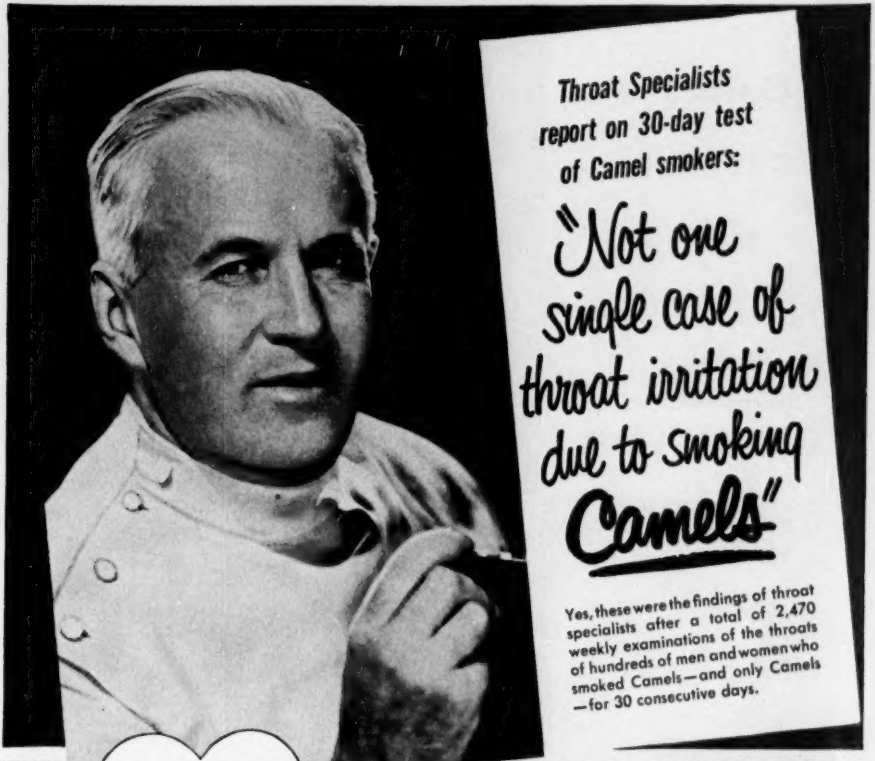

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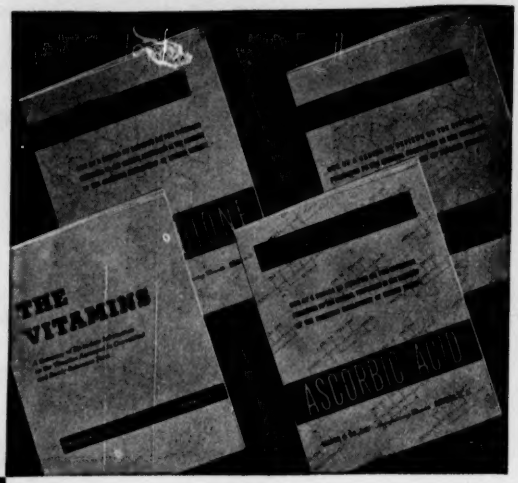

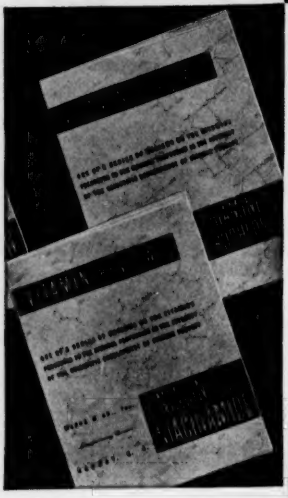

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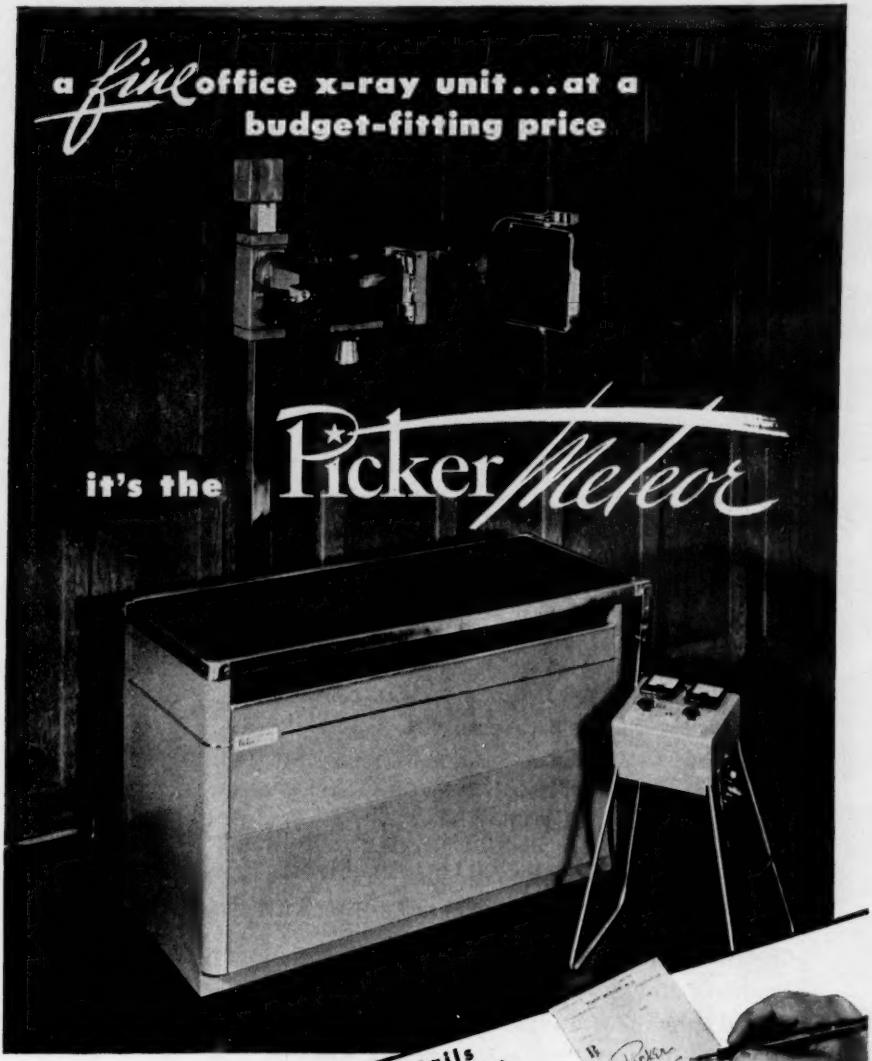

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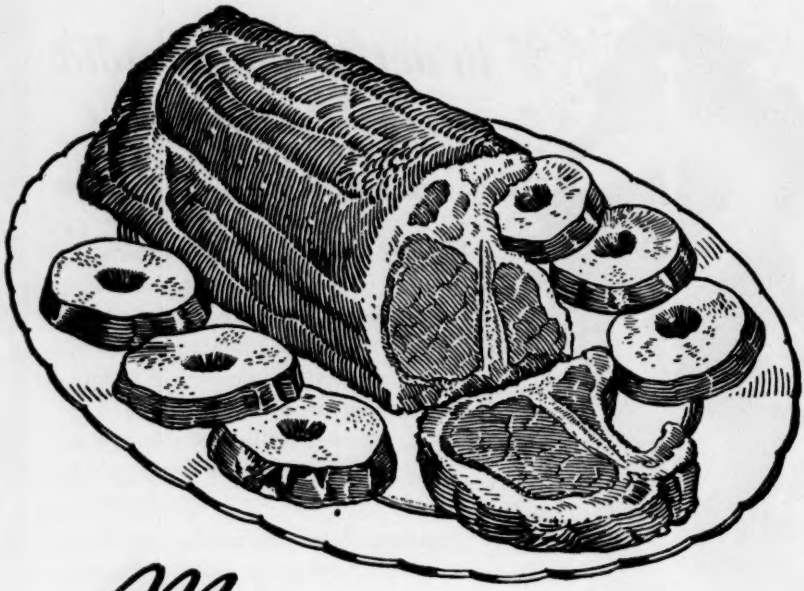

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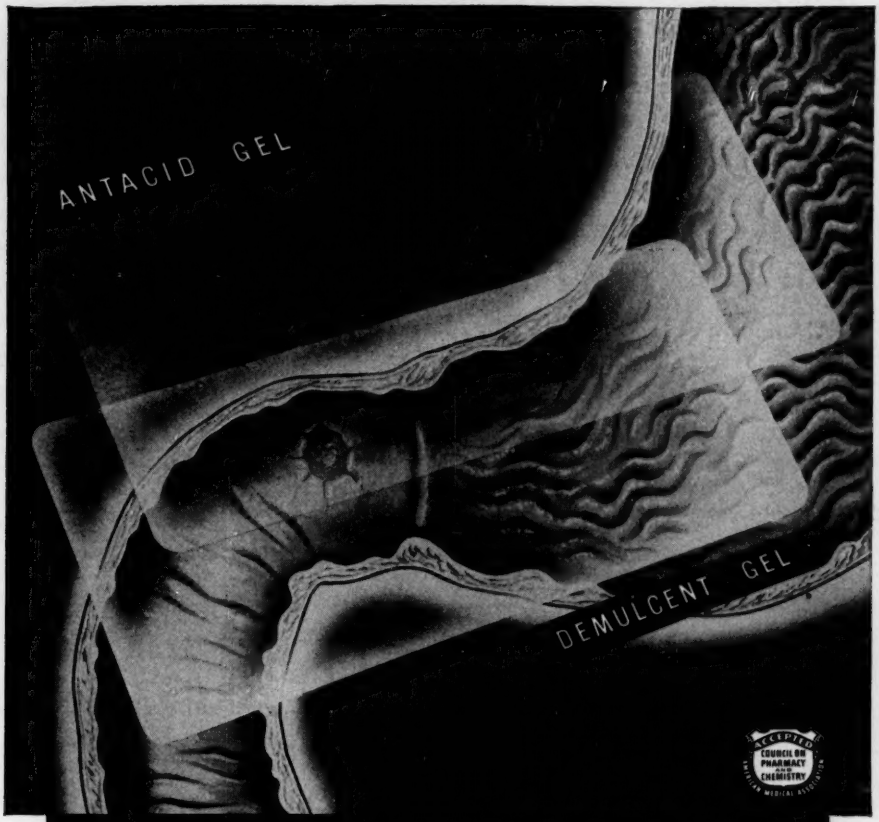

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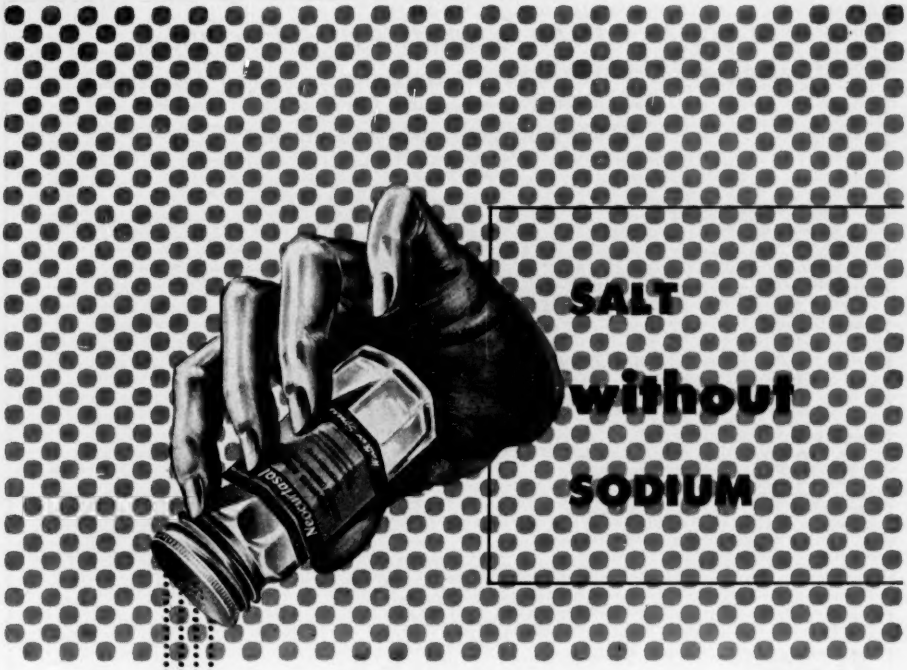

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RHEUMATIC HEART DISEASE IN NORTHWEST NORTH CAROLINA

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For many years numerous investigators have reported on the geographic distribution of rheumatic fever and rheumatic heart disease. In spite of some reports to the contrary, the general impression has been that this disease is confined chiefly to the northern sections of the United States. Consequently, interest in research concerning rheumatic heart disease has been centered largely in these areas. It has been our impression that rheumatic heart disease is far more common in northwest North Carolina than is generally realized, and that it presents both a major health problem and a rich unexplored field for badly needed research.

This report deals with a critical analysis of 582 consecutive autopsies for the years 1943 to 1946 inclusive, and an extensive review of the literature which includes reports from many sections of the nation.

The Incidence of Rheumatic Fever in the United States and in Other Countries

Atwater and Swift have estimated that there are about 170,000 cases of rheumatic fever per year in the United States[1]. Paul's studies have shown that there are about 840,000 cases of rheumatic heart disease, active and inactive, in the United States[1]. It has been calculated that as many as 2 per cent of children of school age have had rheumatic fever and are potential candidates for rheumatic heart disease and recurrences[2]. The Bureau of the Census[3] has revealed that in 1941 rheumatic heart disease caused more deaths among school children in this country than any other disease — a total of 1800 deaths in the age groups from 5 to 14 years. Wolff[4] has presented data showing that, aside from accidents, rheumatic heart disease has become the leading cause of death among white boys and girls 10 to 14 years of age and among white boys 15 to 19. The next commonest causes of death in the 5 to 19 year old age group, following diseases of the heart and blood vessels, are, in the order named, tuberculosis, pneumonia, and cancer.

Among all ages, cardiovascular disease is responsible for three times as many deaths as cancer, six times as many as accidents, ten times as many as pneumonia, and thirteen times as many as tuberculosis. Matz[5] in 1929 surveyed 16,189 veterans with cardiovascular disease whose ages averaged 36 years. He found that 33.50 per cent of the cases were rheumatic, 30.04 per cent were sequelae of infectious diseases, 11.19 per cent were syphilitic, and 4.03 per cent were of arteriosclerotic etiology.

Wolff[4] pointed out that "practical conclusions on how to carry on effectively the campaign against rheumatic fever and its after effects will be facilitated by detailed knowledge of where and when high or low mortal-

From the Department of Internal Medicine, Bowman Gray School of Medicine of Wake Forest College and the North Carolina Baptist Hospital, Winston-Salem, North Carolina.

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ity rates occur." It is known that rheumatic fever is of world-wide distribution and is found wherever alert physicians are looking for it. The incidence has been reported in London as 5.26 per cent[6], in Hawaii as 0.4 per cent[7], in Baltimore as 1.37 per cent[8], and in Peking, China[9], as 0.2 per cent of medical hospital admissions.

Geographic Distribution of Rheumatic Fever in the United States

The geographic incidence is known to vary considerably. Generally speaking, it has been claimed that rheumatic fever occurs more commonly in the northern than in the southern United States, and is more severe in the North. This opinion has been expressed by White[9], who has stated that rheumatic heart disease is five to ten times more common in the North than in the South. Wood, Jones, and Kimbrough[10], comparing the incidence of rheumatic heart disease among all types of heart disease in Virginia and in Boston, Massachusetts, found it to be 22.0 and 39.8 per cent respectively; they concluded that rheumatic heart disease was almost twice as prevalent in Boston as in Virginia. Paul and Dixon[11], in a survey of Indian children, showed that rheumatic heart disease is almost ten times as frequent among Western Indians living in regions close to the Canadian border as it is in those living close to the Mexican border. The prevalence of rheumatic heart disease among the school children studied in Wyoming and Montana was 4.5 per cent, in New England 2.2 per cent, and in southern Arizona 0.5 per cent[11].

Northwest and Rocky Mountain states

From Portland, Oregon, Coffen[12] reported the incidence of rheumatic heart disease to be 4.3 per cent of all medical hospital admissions and 10.1 per cent of all cardiac patients admitted to the hospital. This study included adults as well as children. In San Francisco Richter[13] stated that rheumatic heart disease was responsible for 47.0 per cent of all cases of heart disease among 319 patients from 5 to 18 years of age. Viko[14] reported statistics from the Rocky Mountain region, including Washington, Idaho and Wyoming, showing that 44 per cent of the cases of organic heart disease seen in private practice were due to rheumatic fever. Dauer[15] stated that "from the data presented, it would not be unreasonable to assume that rheumatic diseases of the heart and probably rheumatic fever also, are about as common in the Rocky Mountain as in the eastern states. If not as common, they probably are more fatal."

South Central states

In Galveston, Texas, Stone and Vanzant[16] found the incidence of rheumatic heart disease among cardiac patients visiting their clinic to be 7.9 per cent, and in the same town Schwab and Schulze[17] reported an incidence of 3.4 per cent. From data collected in the routine practice of internal medicine in Texarkana, Texas, Parson[18] obtained a figure of 14.5 per cent as the incidence of rheumatic involvement among his patients with heart disease. Winans and Dunstan[19] and Shelburne[20], however, reported a much higher incidence from the Dallas and El Paso areas. Fashena[21] confirmed their findings by a study of 46 deaths from all causes during a three year period at the Children's Memorial Hospital in Dallas, Texas; she found that 21 per cent of these were caused by rheumatic fever. She declared that "the death rate from all forms of heart disease and acute rheumatic fever in the South Central States is slightly higher than in the New

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21. Fashena, G. J.: The Incidence of Rheumatic Fever in Texas with Particular Reference to the Dallas Area. Texas State J. Med. 39:474-475 (Jan.) 1944.

England States and very nearly approaches the figure for the country as a whole."

South

From New Orleans, Bruno and Engelhardt[22] reported the incidence of rheumatic fever among hospital admissions to be 0.4 per cent, and the incidence of rheumatic heart disease at autopsy to be 0.6 per cent. Uyeda[23], in the same city, found a higher incidence among cases seen at autopsy—1.35 per cent. Nichol[24] reported the incidence of rheumatic heart disease found at autopsy in Miami, Florida, to be 4.0 per cent; among natives of Miami, however, it was only 0.5 per cent. Paullin in Atlanta found rheumatic heart disease in 10.7 per cent of cardiac patients, and in 4.3 per cent of all autopsies[16]. In 600 autopsies at the Charlotte (North Carolina) Memorial Hospital, Mobbs, Kimmelstiel, and Venning[25] reported that 5.0 per cent showed rheumatic heart disease—the highest incidence reported in the South at that time. Among 254 cardiac patients seen in Virginia, Camp and Galvin[1] found rheumatic heart disease in 34.2 per cent. McLean[26] reviewed records at the Children's Hospital in Birmingham, Alabama, and found the incidence of rheumatic fever to be 1.79 per cent of all admissions; cardiac disease was present in 83.6 per cent of these cases. He compared his series with those reported from New York City by May Wilson, and concluded that "children of corresponding ages develop rheumatic infections and cardiac complications associated with the condition, at an earlier age in Birmingham, Alabama, than in New York City."

North

Rothschild and others[27] in New York City found 180 instances of rheumatic heart disease among 3000 autopsies (an incidence of 6.0 per cent), and Davis and Weiss[28] reported the presence of rheumatic heart disease in 7.1 to 9.1 per cent of 5215 autopsies from Boston, Massachusetts. Gardner and White[29] have recently reported on 6000 autopsies from the Massachusetts General Hospital; 436, or 7.26 per cent, of these cases showed rheumatic heart disease, and 513, or 8.38 per cent, coronary heart disease. In 10,000 consecutive clinical cases from the private practice of Dr. White, 1,346, or 13.40 per cent, of the patients were diagnosed as having rheumatic heart disease and 2,840, or 28.40 per cent, as having coronary heart disease.

Findings in a Series of 582 Autopsies

Since the etiologic diagnosis of heart disease *in vivo* is subject to certain inherent errors, it would appear that information concerning the frequency of rheumatic heart disease found at autopsy would more accurately reflect the incidence and importance of rheumatic fever in a community. For that reason we have reviewed 582 consecutive autopsies done at the Bowman Gray School of Medicine during a four year period—1943 to 1946 inclusive.

Ninety per cent of the patients involved in this study were born, lived, and died in northwest North Carolina. The physical characteristics of this area are as follows: mean annual temperature, 58 F.; average annual rainfall, 46 inches; average annual snowfall, 10 inches; average elevation above sea level, 1000 feet[30].

Fifty-four cases of rheumatic heart disease were encountered among these 582 autopsies—an incidence of 9.27 per cent (table 1[31]). Only those cases were counted which, in the opinion of the pathologists, showed unequivocal evidence of rheumatic heart disease. The usual criteria accepted for the pathologic diagnosis of rheumatic valvular lesions and acute rheumatic myocarditis were employed. Numerous cases of calcific disease of the aortic valve were not counted, because of some difference of opinion among various pathologists. Karsner and Koletsky[32], how-

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26. McLean, C. C.: The Age Incidence and Climatic Variations in the Manifestations of So-Called Rheumatic Fever in White Children, J. Pediat. 2:320-330 (March) 1933.
27. Rothschild, M. A., Kugel, M., A. and Gross, L.: Incidence and Significance of Active Infection in Cases of Rheumatic Cardiovascular Disease During Various Age Periods, Am. Heart J. 9:586-595 (June) 1934.
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Table 1
The Incidence of Rheumatic Heart Disease Found at Autopsy

Hospital Location	No. of Autopsies	Percentage	Reported by
Winston-Salem	582	9.27	McMillan and Jones
Boston	5215	7.1—9.1	Davis and Weiss[28]
	6000	7.26	Gardner & White[29]
New York	3000	6.0	Rothschild[27]
Cleveland	2000	6.0	Wartman and Hellerstein[31a]
Charlotte	600+	5.0	Mobbs[25]
Atlanta	210	4.3	Paullin[16]
Miami	401	0.5—4.0	Nichol[24]
Cincinnati	2344	3.0	Glazer[24]
Baltimore	8164	1.6	Longcope[8]
New Orleans	12,317	1.35	Uyeda[23]
Oklahoma	383	0.00	Harrison and Levine[31b]

Table 2
Incidence of Various Diseases Found at Autopsy

Place	No. of Autopsies	Cancer	Tuberculosis	Hypertensive Heart Disease	Congenital Heart Disease	Arteriosclerotic Heart Disease
		Percentage of Cases				
Winston-Salem	582	22.5	3.6	8.6	3.3	9.3
New York[33a]			4.58			
New York[33b]			13.7			
Hagerstown, Md.[33c]			2.7			
Detroit[33d]		26.8				
Los Angeles[33e]		17.2				
Vancouver (33f)		16.9				
Portland[12]	465			7.5		
Boston[9,29]				8.6	1.33	8.38
Cleveland[31a]	2000			13.6		13.6

ever, have shown "that with only rare exception, calcific disease of the aortic valve is the result of rheumatic cardiac disease."

The incidence of all types of heart disease in this series of 582 autopsies was as follows: rheumatic, 9.27 per cent; arteriosclerotic, 9.3 per cent; hypertensive, 8.6 per cent; congenital, 3.3 per cent; syphilitic, 0.9 per cent; thyrotoxic, 0 per cent; subacute bacterial endocarditis, 4.1 per cent. The cases of heart disease totaled 181—an incidence of 31.1 per cent. Of these 181 cases of heart disease, rheumatic fever accounted for 29.8 per cent, arteriosclerosis for 28.1 per cent, hypertension for 27.6 per cent, syphilis for 2.7 per cent, thyrotoxicosis for 0 per cent, subacute bacterial endocarditis for 12.7 per cent, and congenital heart disease for 10 per cent. Some patients had more than one type of heart disease.

Table 2 shows the incidence of various other diseases found in our series of autopsies and in autopsy series reported from general hospitals in other localities[33]. It can be seen that there is no striking difference between our reported incidence of these conditions and the percentages reported from other hospitals. This fact makes the high incidence of rheumatic fever in our series even more significant.

The Incidence of Rheumatic Fever in Northwestern North Carolina

This study, and others cited above[25,26], make it evident that the old axiom regarding the low incidence of rheumatic fever in the South does not hold true. It is our belief, however, that the incidence of rheumatic fever and rheumatic heart disease is much greater in northwestern North Carolina than in the eastern part of the state. Wood and Hart[34] have noted an analogous situation in Virginia, where the incidence of rheumatic fever among hospital admissions in the Piedmont and central areas was more than three times that in Tidewater Virginia. Mills[35] has stated that the mountain states form one area of high death rates from rheumatic fever, and has attributed this fact to the cooler, more stormy weather of the temperate zone. Pounders and Gray[36] mentioned dampness and chilling in discussing factors that play a part in the etiology of rheumatic infection.

North Carolina as a whole ranked thirtieth[4] among the states according to crude death rates from acute rheumatic fever plus diseases of the heart in children 5 to 19 years

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36. Pounders, C. M. and Gray, J. K.: Juvenile Rheumatism, South. M. J. 32:471-475 (May) 1939.

of age. The state's average annual mortality rate from this group of diseases was 11.2 per 100,000, and it had an absolute total of 399 deaths from 1939 to 1941. This was a greater number of deaths from rheumatic and other heart diseases than occurred in any other South Atlantic state.

Difficulties of Diagnosing Rheumatic Fever in the South

Various observers have commented that in mild climates the manifestations of rheumatic fever are usually less severe and dramatic. Richter stated that "the valvulitis characteristic of the rheumatic syndrome is not uncommon in a mild climate like that of San Francisco but its manifestations are much less dramatic and its inception far more insidious."[19] Longcope[8] noted that, although rheumatic fever is as common in Baltimore as in Boston, the severe form of arthritis is not often seen, occurring in only "a moderate portion" of cases. However, cardiac disease was present in 95 per cent of the cases that he had studied, and he stated that "the figures thus emphasize the fact that rheumatic fever, as we see it, is essentially a disease of the heart." Bailey[37] noted that the rheumatic nodule, the skin rash, erythema marginatum, and chorea were usually lacking in the deep South and that the diagnosis depended more on the prolonged fever and cardiac involvement.

The recognition of rheumatic heart disease has recently become more important than ever, since it has been learned that recurrences may be prevented. Because rheumatic fever in the South presents so few of the usual characteristics of the disease, it is certain that many cases are overlooked. Only a little more than a fourth of the patients in our series who were found at autopsy to have rheumatic heart disease gave a past history of rheumatic fever. This incidence of positive past histories is far below any other that we have found (table 3[38]), and indicates that few cases of rheumatic fever in this section of the country are recognized until cardiac damage is severe.

37. Bailey, J. E.: Rheumatic Infection in Children in the Deep South, New Orleans M. & S. J. 93:240-244 (Nov.) 1940.

38. (a) Sutton, L. P.: Observations on Certain Etiological Factors in Rheumatism, Am. Heart J. 4:145-152 (Dec.) 1928; (b) Stone, C. S. and Feil, H. S.: Mitral Stenosis: A Clinical and Pathologic Study of 100 Cases, Am. Heart J. 9:58-62 (Oct.) 1933. (c) McLean, C. C.: Early Rheumatic Infections of Childhood, Arch. Pediat. 46:657-666 (Nov.) 1929.

Table 3

Incidence of Positive Past Histories of Rheumatic Fever in Patients with Rheumatic Heart Disease

Place	Source	No. of Cases	Percentage with Positive Past History
Winston-Salem, N. C.	Autopsy	582	29.5
New York[38a]	Clinical	427	82.0
Texarkana, Tex.[18]	Clinical	500	45.8
San Francisco[13]	Clinical	151	63.0
Cleveland[38b]	Autopsy	100	56.6
Birmingham[38c]	Clinical	118	67.0

Summary

1. Rheumatic fever is of world-wide distribution, and the geographic incidence varies widely. There are about 170,000 cases of rheumatic fever per year in the United States, with a total of 840,000 cases of rheumatic heart disease at any one time.

2. Generally speaking, it has been reported that the death rates in the South and on the Pacific Coast are below the average for the total United States, while in the Northeast they are above the average, and in the Mountain states are extremely high.

3. Certain areas of the South, notably the foothill and mountain areas (Birmingham, Charlotte, and Winston-Salem) exhibited a higher rate of proven rheumatic heart disease than any other sections of the United States.

4. In a series of 582 consecutive autopsies performed at the Bowman Gray School of Medicine the incidence of rheumatic heart disease was 9.27 per cent—the highest incidence reported in the United States.

5. Only 29.5 per cent of the patients who died of rheumatic heart disease at the North Carolina Baptist Hospital gave a positive past history for rheumatic fever.

Conclusions

1. This study has shown conclusively that the incidence of rheumatic heart disease in northwest North Carolina is much higher than in any other section of the United States from which reports are available.

2. Rheumatic fever is a major public health problem in this section, and is overlooked far more frequently than it is recognized.

3. These findings pose an important problem in preventive medicine and warrant an intensive search for all cases of rheumatic fever and rheumatic heart disease in order

that prophylaxis against recurrences, so damaging to the heart, may be carried out.

4. This area offers excellent opportunity for further studies involving the etiology and pathogenesis of rheumatic fever.

SHOULD CARCINOMA OF THE BREAST BE TREATED BY SIMPLE OR RADICAL MASTECTOMY?

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In recent months Professor R. McWhirter[1] of the Royal Infirmary, Edinburgh, Scotland, has advocated the treatment of theoretically curable[2] carcinoma of the breast with simple mastectomy and postoperative roentgen therapy. Since this method is somewhat of a departure from the prevalent teaching in this country, it was thought that a survey of the cases treated at this hospital by simple mastectomy and roentgen therapy in previous years was indicated for a comparative study. The study included all patients who received treatment, either primary or secondary, for carcinoma of the breast between January 1, 1941, when the Bowman Gray School of Medicine was founded, and November 1, 1944 — the last date from which five year survivals could be calculated. Fifty-six cases fell into this group. No patient has been turned away without treatment, and all have been followed.

Of the 56 patients, 37 had a radical mastectomy; some of these received preoperative radiation, some received postoperative radiation, and a few did not receive any radiation. Sixteen of these patients are now alive —a survival rate of 43.2 per cent. However, if this figure is corrected to include all patients who survived as long as five years, and if the patients known to have died of other diseases are omitted, the five year survival rate is increased to 50 per cent. (Two patients lived longer than five years, and 3 died of other disease.) As table 1 shows[3], this figure compares favorably with the national average in reported statistics.

Table 1
Reported Survival Rates In Carcinoma of the Breast

Finney[3a]	49.0%
Lahey Clinic[3b]	52.0%
Adair[3c]	51.0%
Haagensen [3d]	47.2%
Harrington[3e]	48.1%
Englestad[3f]	52.5%
McWhirter[1c]	56.5%

Nineteen cases were treated with simple mastectomy followed by postoperative irradiation to the axilla and chest wall, with minor variations as desired by the operator. Ten of these patients are still alive—a survival rate of 55.56 per cent. If corrections are allowed, the five year survival rate is 68.4 per cent. (Three patients now dead lived longer than five years.) All the deaths are attributable to an extension of the carcinomatous process, except for 2 patients who died of pulmonary emboli in the immediate postoperative period. If the five year survival rate is calculated without these 2 cases, it would be 76.5 per cent.

In order that these cases might be compared to others, various influencing factors have been tabulated.

Stage of the Disease

The pathologist at the North Carolina Baptist Hospital does not classify breast carcinomas according to degrees of malignancy, and the surgical staff feels that clinical staging is a more satisfactory method upon which to base comparisons. Cade's modification[4] of Portmann's original classification[5] has been used:

From the Department of Surgery, Bowman Gray School of Medicine of Wake Forest College, and the North Carolina Baptist Hospital, Winston-Salem, North Carolina.

1. McWhirter, R.: (a) The Value of Simple Mastectomy and Radiotherapy in the Treatment of Cancer of the Breast. Brit. J. Radiol. 21:599-610 (Dec.) 1948. (b) Treatment of Cancer of the Breast by Simple Mastectomy and Roentgenotherapy. Arch. Surg. 59:836-842 (Oct.) 1949. (c) Cancer of the Breast, Am. J. Roentgenol. 62:335-340 (Sept.) 1949.
2. "Theoretically curable" is a much more descriptive term than "operable."
3. (a) Finney, G. G., Merkel, W. C., and Miller, D. B.: Carcinoma of the Breast; Study of 298 Consecutive Cases. Ann. Surg. 125:673-687 (June) 1947. (b) Marshall, S. F., and Hare, H. F.: Carcinoma of the Breast; Results of Combined Treatment with Surgery and Roentgen Rays. Ann. Surg. 125:688-702 (June) 1947. (c) Adair, F. E.: The Role of Surgery and Irradiation in Cancer of the Breast. J.A.M.A. 121:553-559 (Feb. 20) 1943. (d) Haagensen, C. D., and Stout, A. P.: Carcinoma of the Breast; Results of Treatment, Ann. Surg. 116:801-815 (Dec.) 1942. (e) Harrington, S. W.: Survival Rates of Radical Mastectomy for Unilateral and Bilateral Carcinoma of the Breast. Surgery 19:154-166 (Jan.) 1946. (f) Englestad, R. B.: Surgical and Radiation Treatment of Cancer of the Breast. Am. J. Roentgenol. 60:776-787 (Dec.) 1948.
4. Cade, S.: Carcinoma of the Breast, J.A.M.A. 138:1083-7 (Dec. 11) 1948.
5. Portmann, U. V.: Clinical and Pathologic Criteria as a Basis for Classifying Cases of Primary Cancer of the Breast, Cleveland Clin. Quart. 10:41-47 (July) 1943.

Stage I—Tumor of the breast only
Stage II—Tumor of the breast with cutaneous changes and/or ipsilateral palpable axillary nodes
Stage III—Tumor of the breast with ipsilateral supraclavicular nodes, contralateral axillary nodes, or fixation of the breast to the pectoral fascia
Stage IV—Skeletal or visceral metastasis

As is shown in table 2, the majority (85.7 per cent) of the cases treated by radical or simple mastectomy fell into the first or second classification. The one patient whose disease was classified as stage III has cutaneous recurrence of the carcinoma. These figures emphasize the often demonstrated fact that patients with stage III or IV carcinomas do not live long, with or without treatment. Incidentally, most authors calculate their five year survival rates without including the cases in stages III and IV; all of the patients treated here have been counted in our calculations.

Table 2
Classification of Cases by Stage

	Simple Mastectomy		Radical Mastectomy		
Stage	Alive	Dead	Alive	Dead	Totals
I	2	1	9	1	13
II	7	3	7	18	35
III	1	3	0	2	6
IV	0	2	0	0	2
Totals	10	9	16	21	56

Table 3
Pathologic Diagnosis

	Simple Mastectomy		Radical Mastectomy		
Type	Alive	Dead	Alive	Dead	Totals
Scirrhous or medullary	6	7	13	19	45
Intraductal or comedo	3	0	3	2	8
Colloid	0	1	0	0	1
Paget's	1	1	0	0	2
Totals	10	9	16	21	56

Type of Cancer

The preponderance (80.4 per cent) of the lesions were of the type that arises from the acinar cells—that is, either scirrhous or medullary carcinoma. The distribution, shown in table 3, corresponds fairly closely with that reported by other investigators with large series of cases[3c,e,6].

Age

The distribution of cases according to age groups is shown in table 4. The average age for each of the two groups was nearly identical—49.2 years for the simple mastectomy group, and 49.4 years for the radical mastectomy group. The age distribution chart is practically a replica of one constructed from data reported by several other authors.

Table 4
Age of Patients at the Time of Treatment

	Simple Mastectomy		Radical Mastectomy		
Age Groups	Alive	Dead	Alive	Dead	Totals
21-30	0	0	1	1	2
31-40	3	3	5	2	13
41-50	4	0	6	7	17
51-60	2	4	3	6	15
61-70	1	2	0	4	7
71-80	0	0	1	1	2
Totals	10	9	16	21	56

Table 5
Reasons for Choice of Simple Mastectomy

Explanation	No. Cases	Five Year Survival
Considered adequate therapy	11	8
Palliative measure only	7	4
Refused radical procedure	1	1
Totals	19	13

Reasons for Performance of Simple Mastectomy

Table 5 lists the reasons given by the operating surgeons for performance of simple mastectomy. The operations were performed by ten different surgeons drawn from both the attending staff and the house staff.

Comment

When Professor McWhirter[1a] first advocated simple mastectomy and roentgenotherapy as the treatment for carcinoma of the breast, his five year survival rate was estimated to be 56 per cent. Ramsdell[7] promptly stated, after analyzing the statistics from several large clinics in the United States, that if McWhirter's figures were substantiated, then "the whole concept of our thinking on this subject of cancer of the breast must be modified." Professor McWhirter's subsequent papers[1b,c] have indicated that his actual five year survival rate, in theoretically curable cases, was 56.5 per cent. Thus it appears that we must modify our thinking concerning the treatment of carcinoma of the breast.

6. Nicholson, W. P., and Grady, E. D.: Carcinoma of the Breast, Ann. Surg. 127:993-1009 (May) 1948.

7. Ramsdell, E. G.: Carcinoma of the Breast; A Comparative Statistical Study, South. Surgeon 14:637-644 (Sept.) 1948.

At the present time treatment of the theoretically curable cases varies a great deal with different surgeons, but by far the great majority[3a,c-f,4,8] firmly advocate radical mastectomy immediately following the establishment of a positive diagnosis by means of microscopic study of a frozen biopsy specimen. Such treatment is based on the premise that the only cure for carcinoma of the breast is the wide excision and complete extirpation of every vestige of the neoplastic growth. This is theoretically sound, but in practice the removal of all of the carcinoma, except in stage I lesions, is never assured. Nicholson[6] has recently advocated, in selected cases the use of a "simple radical" operation, consisting of simple mastectomy, excision of the anterior pectoral-fold nodes, and irradiation (pre- and post-operative). His selection of cases is based on the age and physical condition of the patient; he feels that an elderly patient will do just as well with a simple mastectomy, and that a physically infirm patient should not be subjected to a radical mastectomy. Many other surgeons follow this dictum.

Roentgenotherapy is used frequently in conjunction with radical mastectomy. The figures reported indicate that such treatment does not increase the survival rate in stage I lesions, but does help in stage II lesions. Baclesse[9], of the Curie Foundation, and a few others advocate the use of extremely high doses of x-ray alone to treat carcinoma of the breast.

The rationale for treatment by simple mastectomy and roentgenotherapy is based on simple facts. When cancer is confined to the breast, surgery gives excellent results—hence, simple mastectomy. However, if the axilla is involved, surgery often fails to eradicate the disease. Since it is generally agreed that roentgenotherapy is effective in some forms of breast cancer—for example, skin recurrences and metastatic lesions—its use in the treatment of metastatic cancer of the axillary nodes seems logical. Moreover, it has been found that more patients can tolerate a full course of x-ray following simple mastectomy than following radical mastectomy. The simplicity of the procedure and the lack of postoperative complications are indeed welcome secondary benefits of simple mastectomy.

8. (a) Berven, E.: Treatment and Results in Cancer of the Breast, Am. J. Roentgenol. 62:320-325 (Sept.) 1949. (b) Monroe, C. W.: Lymphatic Spread of Carcinoma of the Breast, Arch. Surg. 57:479-486 (Oct.) 1948. (c) Landham, J. W., Jr.: The Diagnosis and Treatment of Breast Cancer, J. M. A. Georgia 36:268-271 (July) 1947. (d) Treves, N.: The Diagnosis and Treatment of Cancer of the Breast, West Virginia M. J. 43:270-276 (Aug.) 1947. (e) Buchholz, R. R.: The Problem of Carcinoma of the Breast, J. Indiana M. A. 42:382-385 (April) 1949.

9. Baclesse, F.: Roentgen Therapy as the Sole Method of Treatment of Cancer of the Breast, Am. J. Roentgenol. 62:311-319 (Sept.) 1949.

Summary

There is no unanimity of opinion on the method of choice for the treatment of early (stage I or II) carcinoma of the breast, but the investigators who have had the largest experience in this field advocate radical mastectomy, either with or without roentgen therapy. Careful investigation of the reported survival rates and analysis of the data on patients treated at this hospital make it appear that the McWhirter treatment (simple mastectomy followed by roentgen therapy) is worthy of further investigation. This series of cases is obviously small, but in the absence of any large series, the cumulative data from small units must suffice at present.

THE DIAGNOSIS OF MALIGNANT MELANOMA OF THE EYE

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Nowhere in medicine is the necessity for constant suspicion greater than in the case of malignant melanoma of the eye. The mortality rate from this disease has been variously quoted at 40 to 50 per cent, even after enucleation of the offending eye. Any hope for reducing this disheartening fatality rate must depend on early diagnosis. The problem is made more difficult by the frequency with which this tumor presents itself in a disguised form, masquerading as some other eye disease, or indeed as a systemic complaint completely divorced from the eye[1]. The recent occurrence of several of these disguised melanomas among the patients of the relatively small ophthalmology service in this hospital emphasizes once again the extreme urgency of this problem.

While malignant melanoma of the eye is

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1. (a) Terry, T. L.: Malignant Melanoma—So-Called Sarcoma—of Uvea; Problems in Diagnosis, Arch. Ophth. 22: 989-1022 (Dec.) 1939. (b) Terry, T. L. and Johns, J. P.: Uveal Sarcoma—Malignant Melanoma; A Statistical Study of 94 Cases, Am. J. Ophth. 18:903-913 (Oct.) 1935.

a relatively infrequent disease, occurring in 2 to 6 out of every 10,000 ophthalmologic patients[2], the possibility of malignant melanoma should be kept constantly in mind. In Terry's series of 94 cases[1b] the presence of a tumor was not even suspected in 42 of these cases until after the eye was enucleated. Early diagnosis and immediate enucleation are extremely important in this condition, since metastasis may occur very early, while the tumor is still quite small and localized.

Differential Diagnosis

The most important of the presenting disorders which so often lead to a mistaken diagnosis are glaucoma, retinal separation, iridocyclitis, and the combination of a unilateral cataract with glaucoma, iridocyclitis, or both. Less frequently the malignant melanoma may masquerade as panophthalmitis, intraocular hemorrhage, ulcerative keratitis, and especially as a disorganized phthisic globe. Terry and Johns[1b] reported that uveitis occurred in 75 of their 94 cases, retinal separation in 85 of 91 cases, and glaucoma in a third of their cases.

Among the ocular conditions which may be mistakenly diagnosed as malignant melanoma are disciform degeneration of the macula, inflammatory tumors of the retina or choroid, choroidal separation, subchoroidal hemorrhage, localized melanomas, and other tumors of the eye, both benign and metastatic. While such an error in diagnosis is disconcerting, it is far less serious than failure to recognize the presence of malignant melanoma when it is there.

Diagnostic Aids

Transillumination of the globe is perhaps the most helpful single differential method, but it is certainly not an infallible means of diagnosis. In addition to applying a point source of light about the lids and anterior portion of the eye while the pupillary reflexes are observed, it may be necessary to make a conjunctival incision and insert the transilluminator behind the globe in order to cover its entire surface. The transillumination is more efficient if the fundus is kept under observation with an ophthalmoscope while the transilluminator is moved outside the scleral sheath. Unfortunately, the transilluminator cannot differentiate between a tumor and a hemorrhagic or inflammatory mass. A tumor must always be strongly suspected in the presence of retinal separation. Separations in which no tear can be found, and particularly minimal detachments in the area of the macula or of the ora serrata, should be regarded with especial suspicion—and of course if the separation fails to show its usual transparency this suspicion should be increased.

The presence of unilateral ocular symptoms may often be helpful in pointing toward the diagnosis of malignant melanoma. Unilateral glaucoma, especially when accompanied by a unilateral cataract, should always be considered suggestive of malignant melanoma. In such cases Samuels[3] has emphasized the importance of the early history of visual change—distortion, localized flashes of light or light sensitivity, or localized dark waves or spots being especially suggestive of malignant melanoma. Samuels feels that enucleation should be done when cataract and glaucoma occur together in only one eye and the possibility of a tumor exists. Unilateral uveitis, especially iridocyclitis which cannot be explained on any other basis and particularly if accompanied by unilateral glaucoma or cataract, should be regarded with equal suspicion. Unilateral glaucoma with a retinal detachment also should be held suspect, since the tension is usually lower in the presence of a detachment. A unilateral pigment disturbance, usually reflected by multiple pigment freckles in the iris of one eye alone, may also be a helpful sign.

Finally, unexplained abdominal or digestive disturbances in the presence of unilateral blindness or ocular disturbances of a serious nature, and particularly when accompanied by enlargement of the liver, point strongly toward a diagnosis of a malignant melanoma. In such cases, however, it is almost certain that metastasis to the liver (by far the most common site of metastasis) has already occurred.

Malignant melanomas develop with dangerous frequency in old, phthisic globes. Their shriveled condition, the obscure visualization of their contents, and their tendency to recurrent inflammatory episodes make accurate determination of the presence or absence of a tumor in these eyes virtually impossible. The danger of malignant melanoma,

2. Duke-Elder, W. S.: Textbook of Ophthalmology, St. Louis, C. V. Mosby Co., 1938, v. 3.

3. Samuels, B.: Cataract Associated with Intraocular Tumors, Arch. Ophth. 35:366-383 (April) 1946.

combined with the many other indications, should make the removal of such a useless organ mandatory.

Case Reports

The following cases seen on the ophthalmology service at the North Carolina Baptist Hospital are reported to demonstrate once again the diagnostic problems presented by malignant melanoma in the eye:

Case 1

A 44 year old white man was admitted in August, 1944, with a chief complaint of pain in his right chest and back, swelling of his ankles, and increasing orthopnea for several weeks before admission. He had had mild orthopnea for several years. The pain in his back began after a fall in December, 1943. In March, 1944, he began to have severe pain in his mid-chest at the lower part of his sternum, which was worse when stooping, coughing, or changing his position. His ankles had been swelling for about four weeks before admission, and the swelling had subsided every night. He had lost about 20 pounds in weight during the four months before admission.

About eleven years before admission the vision in his right eye had begun to fail rapidly, and within seven months he had become completely blind in that eye. He had had no pain in the eye throughout the past history.

Physical examination on admission showed the blood pressure to be 172 systolic, 90 diastolic, and the temperature 100.6 F. The patient was a poorly nourished man who appeared chronically ill. His right eye appeared somewhat more prominent than the left; the lens was opaque, the pupil irregular and bound down; the fundus was not visualized. There was considerable tenderness to pressure and percussion over the right side of the chest. A systolic thrill was felt at the apex, and a loud blowing systolic murmur was heard at the apex. There was a definite, pronounced gallop rhythm. The abdomen was more prominent in the right upper quadrant, and the liver was felt to be enlarged, with a firm, apparently smooth edge. There was moderate pitting edema of the feet and ankles, and over the skin were numerous **cafe au-lait spots.**

Blood count showed a moderately severe hypochromic anemia. The urine was positive for melanin. The nonprotein nitrogen was 50 mg. per 100 cc. of blood. Roentgen examination revealed, besides evidences of hypertensive cardiovascular disease with cardiac enlargement, some non-specific pneumonitis in the right lower lobe of the lung, decalcification and thinning of the bodies of the vertebrae, including the twelfth dorsal and first and second lumbar vertebrae, and in the skull several sharply outlined areas of bone destruction.

Although the possibility of metastatic tumor was considered, a primary ocular malignancy was not thought of until the patient had been studied intensively for ten days. An ophthalmologist was then called in to evaluate the supposed cataract in his right eye, and also any possible significance of the slight prominence of the right eye. On his recommendation an enucleation was done to rule out a malignant melanoma of the choroid.

Following the operation the patient's course was steadily downhill and he expired on October 19, 1944, in congestive failure. Pathologic examination of the enucleated eye revealed the presence of a malignant melanoma of the choroid, and postmortem examination of the patient showed diffuse metastases to the liver, lungs, spleen, gastrointestinal tract, and multiple bone sites.

Comment: More than eleven years elapsed between the onset of the patient's ocular symptoms and his death, and it was not until the last two months of his life that the possibility of a malignant tumor in his eye was considered. Even at his final hospitalization his presenting symptoms did not directly point toward the eye, but rather toward some general systemic disease.

Case 2

This white woman, aged 62, was first admitted to the North Carolina Baptist Hospital in May, 1941, for enucleation of the right eye, which was extremely painful and absolutely glaucomatous. Examination at the time revealed only the red, blind eye, which was described as bulging, but which showed no masses in the fundus. The left eye was described as being essentially normal. A simple enucleation was done at that time, and the pathologic report confirmed the diagnosis of absolute glaucoma.

The patient was readmitted seventeen months later with a complaint of indigestion of several weeks' duration, consisting chiefly of gas and a feeling of tightness in her epigastrium after meals. She had also had some dull pain in the precordium, radiating into the left shoulder and arm, and had had slight ankle edema and exertional dyspnea for several years. The only positive finding of importance at that time was pyloric spasm, demonstrated in roentgen studies of the gastrointestinal tract. Two months later the patient was again admitted for excision of a small tumor of the left jaw, which had been present for several years and which was diagnosed pathologically as a mixed tumor of the parotid gland.

Her final admission was in September, 1945, when she was complaining of increased gas and abdominal distention, together with pain and tenderness in the right upper quadrant and a gradually enlarging mass in this area. She had also been having frequent nausea and considerable anorexia. She had lost a good deal of weight and had been increasingly constipated. Her stools were light colored and her urine had been very dark in color for the week preceding admission.

Physical examination on the last admission showed an obese, icteric white woman who appeared chronically ill. The abdomen was protuberant and diffusely tender. The tenderness was most marked over the liver, which could be felt 5 or 6 cm. below the right costal margin. It was firm, and no definite nodules could be felt. The only other positive findings were moderate enlargement of the spleen and the edema previously described.

The urine was dark yellow, with a specific gravity of 1.007; it contained a trace of sugar in the urine, and was negative for urobilinogen. The corrected sedimentation rate was 35 mm. per hour, and the white blood cell count was 12,950 with a normal differential. Total serum proteins were 4.8 Gm. per 100 cc., with a normal albumin-globulin ratio. Serum bilirubin was 1.2 mg. per 100 cc. The bleeding and clotting time and prothrombin time were within normal limits.

The patient's course was slowly but steadily down-

hill. The hepatic enlargement, jaundice, nausea, and vomiting were progressive until her death three weeks after admission. Postmortem examination revealed metastatic malignant melanoma of the liver. After this finding was reported, the original sections on the enucleated eye were reviewed again, and a small, flat malignant melanoma of the choroid was discovered.

Comment: Although this patient came in originally with a presenting symptom of unilateral absolute glaucoma, no tumor was found or suspected at that time. The tumor was overlooked in the original pathologic study on the enucleated eye, and was not discovered until the patient had died of metastases from this tumor. The case illustrates the fact that metastasis from malignant melanoma of the uvea may occur in the very earliest stages of the tumor.

Case 3

A 54 year old white woman was admitted to the hospital in December, 1948, for treatment of an infection in her right eye. She stated that the vision in her right eye had begun to fail approximately seven years previously. Three years before admission she "caught a cold" in the right eye, and at that time had pain, photophobia, lacrimation, tenderness, and discharge. This acute attack subsided under treatment by her local physician. Since that time her vision in the right eye had been no more than light perception and she had been told that she had a cataract there. One week before her present admission the right eye again became red and painful, and discharge and epiphora developed. These symptoms had been progressive until her admission here.

On admission the right eye was blind, and the left eye had a corrected vision of 20/20. Examination of the right eye revealed a purulent conjunctival discharge and a large, ragged corneal ulcer involving about half the corneal surface. Extensive hypopyon and a densely opaque cataract were present. The eye was intensely inflamed and painful. Examination otherwise was essentially non-contributory. No abdominal masses or other systemic abnormalities were found.

Intensive treatment with penicillin intramuscularly and sodium sulfacetimide and aureomycin ophthalmic solution locally brought about marked improvement of the ulcer within four days. The corneal ulcer perforated and permitted collapse of the chamber, but then became smaller in size and much cleaner than before. The eye remained grossly inflamed and painful. The tension was never elevated. It was impossible to visualize the fundus because of the dense mature cataract; for the same reason transillumination was never entirely satisfactory, although there was a suggestive darkening in the inferior half of the globe.

After a week of treatment, when the intense inflammatory process had subsided, enucleation was done to rule out the possibility that an intraocular tumor might be present. This was carried out without complication, and the orbit was grossly free of any evidence of extension. Pathologic examination showed an intraocular malignant melanoma of the choroid which was beginning to invade one of the scleral canals.

Further questioning of the patient's husband revealed that the eye had never been entirely free of redness and irritation since the initial onset of her trouble some seven years ago, at which time her vision failed rather rapidly. It seems likely that she had had glaucoma or uveitis secondary to the tumor ever since her symptoms appeared. The patient's postoperative course has been essentially uneventful, and so far there is no evidence of any local recurrence or metastasis of the tumor.

Comment: In this case the presence of a tumor was well hidden by the acute, fulminating infection, which presented itself to us as a corneal abscess with perforation. The presence of the dense mature cataract made absolute preoperative diagnosis of the tumor impossible, but the clinical picture made enucleation seem the wise course to follow.

Case 4

An obese and highly neurotic white woman, aged 42, was first seen as an outpatient in April, 1949, complaining of a cataract in her right eye and blurring of vision in the left eye. The vision in her right eye had been poor since a painful episode some twenty-five years previously. She had been subject to frequent headaches and had had many other complaints—among them, a dull aching sensation in her chest and upper abdomen, shortness of breath, and distention and vomiting following meals. About four to five years before her first visit here, her vision had grown much worse, and for at least two to three years she had been unable to see any more than light with the right eye.

Examination revealed that vision in the right eye was limited to light perception, with faulty light projection. Vision in the left eye was 20/17 with or without correction. The right eye showed moderate conjunctival injection and a circumcorneal flush, many large keratic precipitates on the posterior corneal surface, and a faint aqueous flare with a few floating cells in the anterior chamber. The anterior chamber was deep, and the lens was a hypermature cataract. The tension in the right eye was 43 mm. (Schiötz), and the tension in the left was 16 mm. (Schiötz). Medical examination revealed no organic findings of any significance, except evidence of a spastic colon. Since no beds were available at that time, a paracentesis was done on the cornea of the right eye to lower the tension and she was referred back to her local ophthalmologist.

She returned to the hospital for admission in early July, 1949, with the story of having continued to have much pain and redness in the right eye. On admission the examination was essentially as before. The ocular tension was 32 mm. (Schiötz) on the right, and 21 on the left. The pupil was not dilated, and there were a few very tiny fibrous strands between the pupillary margin and the lens surface which broke loose when the pupil was dilated with a 5 per cent solution of homatropine. Paracentesis and the use of prostigmine and Furmethide were effective only temporarily in relieving the tension.

The possibility of an intraocular tumor was considered, but transillumination showed no changes suggestive of this possibility. After a thorough investigation had failed to establish a definite cause for the patient's iritis, she was given fever therapy with remarkable improvement in the iritis and decrease in tension. The patient was discharged after the iritis had become quiescent.

She returned in less than two weeks with marked pain, elevation of tension in the right eye, and renewed activity of the iritis. Since it was felt that the hypermature cataract might be the source of the recurring iritis and elevated tension, an intracapsular cataract extraction was done despite continued active inflammation. The patient's postoperative course was smooth, and she was discharged with only a barely perceptible aqueous flare. Considerable vitreous haze was still present, however, and a clear view of the fundus could not be obtained at the time of discharge.

Five weeks later, the tension in the right eye was elevated to 62 mm. (Schiötz). The patient was again admitted to the hospital, and the tension was brought down by retrobulbar injection of procaine and adrenaline. The pupil was dilated maximally with homatropine and a 10 per cent solution of Neosynephrine for another thorough study of the fundus, and an area of elevation and increased density of the subretinal tissues was discovered in the inferior temporal quadrant at about the level of the ora serrata. The mass was too far forward to be seen clearly, but it could be definitely outlined by transillumination under ophthalmoscopic examination. In view of this finding and the prolonged unilateral course of uveitis, glaucoma, cataract formation, and continuous pain in the presence of the mass, further conservative treatment was felt to be unwise, and the eye was removed. The patient's postoperative course was smooth, and she has been essentially well since the enucleation. However, the pathologists were unable to demonstrate any tumor in the eye. They reported an area of subchoroidal hemorrhage near the ora serrata in the general area in which the mass was noted clinically.

Comment: This case is an example of a mistaken diagnosis of malignant melanoma in the eye, leading to enucleation. The mass observed clinically was apparently due to a subchoroidal hemorrhage. The long history of unilateral eye disease, with uveitis, glaucoma, cataract, and vague unexplained abdominal complaints certainly pointed toward the possibility of a malignant melanoma, and the mass seen following extraction of the cataract seemed to be a virtually definite indication of malignant melanoma. It would not be surprising if this patient should at some future date show evidence of metastatic melanoma, despite the inability of the pathologists to confirm this diagnosis.

Summary

Difficulty in the diagnosis of malignant melanoma of the eye, especially in its disguised forms, doubtless contributes to the high mortality rate from this disease.

A most useful diagnostic aid is the careful use of transillumination, particularly in cases of retinal detachment. Unilateral eye disease, particularly glaucoma, iridocyclitis, cataract, and combinations of these, are helpful clues pointing toward the diagnosis of malignant melanoma of the eye. Lastly, the combination of abdominal or digestive complaints with unexplained blindness or ocular complaints should bring to mind the possibility of this disease.

Removal of all old phthisic eyes is urged.

Four cases demonstrating problems in the diagnosis of malignant melanoma of the eye have been presented.

CEREBRAL ANGIOGRAPHY

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The value of cerebral angiography to the neurologist and neurosurgeon has increased with experience gained in studies of this type. Developed by Moniz[1] in 1927, this technique has proved to be a useful adjunct to the neurologic examination as well as to the time-proved air studies of the brain. Under certain conditions, it gives information not available from electroencephalography, pneumoencephalography, and ventriculography. Sufficient experience has accumulated to define the indications, contraindications, diagnostic possibilities, and complications of cerebral angiography.

Cerebral angiography is a roentgenographic demonstration of the vessels of the brain made by taking skull films at various intervals after injection of radio-opaque fluid into the carotid or vertebral artery. Roentgenograms taken at properly timed intervals may delineate separately the arteries, capillaries, or veins. Since the normal circulation time through the brain from the common carotid artery to the internal jugular vein is about 4½ seconds, rapid exposures are necessary. Special equipment devised to facilitate accurate timing of the roentgen exposures is helpful, although it is not essential. In certain pathologic conditions, the circulation through the brain may be accelerated or slowed down, so that the timing of the exposures must be varied[2].

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1. Egas Moniz: L'encephalographie arterielle, son importance dans la localisation des tumeurs cerebrales, Rev. Neurol. 2:72-90 (July) 1927.
2. Elvidge, A. R.: The Cerebral Vessels Studied by Angiography: The Circulation of the Brain and Spinal Cord, A. Research Nerv. & Ment. Dis. (1937) 18:110-149, 1938.

Technique

Either the carotid or the vertebral arterial system may be injected, but abnormalities of the former are so much more common that carotid angiography is more often indicated. In most individuals the carotid artery, usually the common carotid, can be punctured directly through the skin by a sharp no. 18 needle (fig. 1), and the radio-opaque material may be injected through the same needle[3]. If the artery is not engaged satisfactorily by the percutaneous route, a small incision is made in the neck and the needle inserted into the artery under direct vision[4].

Once the needle is placed in the artery, repeated injections may be made. Ordinarily a 35 per cent solution of Diodrast is used, and four to six injections of 10 cc. each are made. Before this compound is used, the patient must have a negative skin test for sensitivity to Diodrast. The arterial injection is done as rapidly as possible, and a roentgen exposure is made after 8 of the 10 cc. have been injected. Such an exposure usually shows the internal carotid artery and the arterial tree of the anterior and middle cerebral arteries. Occasionally the posterior cerebral artery is demonstrated as well. Two such injections and exposures are made with the patient's head placed so that lateral stereoscopic films can be taken. The third film, which is made four seconds after the third injection, demonstrates Diodrast in the veins; a phlebogram is thus produced. The patient's head is then turned to the anteroposterior position, and an arteriogram and a phlebogram are made in a similar manner; this time, however, stereoscopic views are omitted in order to reduce the amount of contrast medium used.

After the films are found to be satisfactory, the needle is withdrawn from the artery. If an incision has been made, it is closed with silk. If a percutaneous injection has been made, pressure is maintained over the artery for three or four minutes after the needle has been withdrawn. The entire procedure may be done under local anesthesia with heavy preoperative medication, but usually intravenous Pentothal anesthesia is preferable for adults, drop ether anesthesia for children.

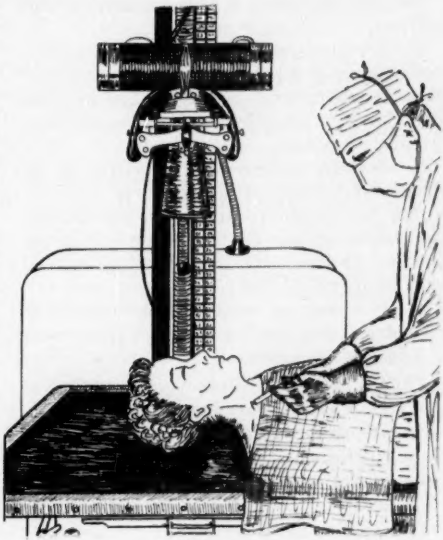

Figure 1

Some operators prefer to move the roentgen ray tube instead of the patient's head, and thus expose all the films with the brow up. In such cases, it is necessary to direct the central ray horizontally for the lateral views, and the film casette is covered with a portable grid. Since the standard Bucky-Potter diaphragm produces a clearer film, the routine use of the method described above is justified.

Radio-Opaque Materials

Two compounds are in current use, each having its advantages and disadvantages, each having its proponents and antagonists.

Diodrast, in a 35 per cent solution, has the following advantages:

1. It is rapidly excreted, and up to 70 or 80 cc. can be used safely for multiple injections[5]. Since it does not accumulate in the body, repeated studies can be made if necessary.
2. It is not radioactive.
3. Satisfactory contrast is obtained if the injections are rapid and the roentgen exposures properly timed[6].

3. (a) Poppen, J. L.: Diagnosis of Intracranial Aneurysms, Am. J. Surg. 75:178-180 (Jan.) 1948. (b) Raney, R., Raney, A. A., and Sanchez-Perez, J. M.: The Role of Complete Cerebral Angiography in Neurosurgery, J. Neurosurg. 6: 222-237 (May) 1949.
4. Ingraham, F. D. and Cobb, C. A., Jr.: Cerebral Angiography: A Technique Using Dilute Diodrast, J. Neurosurg. 4:422-434 (Sept.) 1947.
5. Gross, S. W.: Cerebral Arteriography by Means of a Rapidly Excreted Organic Iodide, Society Transactions, Arch. Neurol. & Psychiat. 44:217-222 (July) 1940.
6. Sanchez-Perez, J. M.: Cerebral Angiography, Surgery 10: 535-552 (Oct.) 1941.

The disadvantages of this material are as follows:

1. It is hypertonic and is, therefore, capable of causing local irritation of an arterial wall, occasional arterial spasm, and possible thrombosis of an artery or vein[7]. Such occurrences are rare.

2. Certain patients are sensitive to iodides and occasional deaths have been reported following its intravenous administration for urography[8], even after a negative skin test has been obtained. The incidence of such fatalities is about 0.0039 per cent.

3. It is not as strongly radio-opaque as Thorotrast, and greater care in the exposure of films is necessary.

Thorotrast has the following advantages:

1. It is strongly radio-opaque.

2. Being a colloidal suspension of thorium dioxide, it is not irritating on immediate injection, and is less likely to cause arterial spasm.

Its disadvantages are:

1. It is radioactive and probably carcinogenic[9]; the injection of large amounts for the study of liver disease has been followed by the development of cancer some years later[10]. It is inadvisable, therefore, to employ Thorotrast for angiography in children and young adults; in any case, multiple injections cannot be made with safety.

2. Although it is not immediately irritating, it will, if deposited in the tissues around the vessel, cause intense fibrosis and scar tissue[11], occasionally necessitating operative removal of the scar. Because of this danger, angiography done with Thorotrast requires an open technique for injection rather than the simpler percutaneous method. Thorotrast may be deposited in the walls of the small arteries of the brain[12], causing subsequent fibrosis and late arterial occlusion.

Indications for Angiography

Intracranial vascular malformations

Spontaneous subarachnoid hemorrhage occurring in an individual under the age of 50 is most often due to a congenital intracranial aneurysm. At least 50 per cent of such patients die in the first episode of bleeding, another 25 per cent in the second episode[13]. Certain intracranial aneurysms can be successfully treated by ligation of the carotid artery in the neck or by intracranial ligation of the aneurysm. The demonstration of the aneurysm by angiography is of genuine value in such cases. Arterial aneurysms, arteriovenous aneurysms, and congenital angiomas may be localized and their extent outlined by this method.

Intracranial tumors

In certain selected cases, cerebral angiography can take the place of ventriculography in the localization and diagnosis of brain tumors. In general it is an adjunct to air studies; occasionally it is of no value at all. Ordinarily angiography is restricted to those cases in which a supratentorial tumor is suspected, since most tumors of the posterior fossa are not well demonstrated by this method. Small tumors lying in or near the ventricles are seen more clearly in the ventriculogram than in the angiogram. Tumors near the surface of the hemispheres are more easily demonstrated by angiography.

In properly selected cases, particularly large parasellar tumors and cystic astrocytomas of the hemispheres, the location of the tumor may be made out by the displacement of the normal vascular tree of the brain[14]. Certain vascular tumors, such as the meningiomas and malignant gliomas, possess a vascular pattern so characteristic as to make the histologic diagnosis almost certain from the outline of the contrast medium within the tumor[15].

Other space-occupying lesions

Angiography has been used in cases of intracranial trauma to determine the presence of a subdural or extradural hema-

7. (a) Chusid, J. G., Robinson, F., and Margules-Lavergne, M. P.: Transient Hemiplegia Associated with Cerebral Angiography (Diodrast), J. Neurosurg. 6:466-474 (Nov.) 1949. (b) Kemp, F. H.: Venous Thrombosis Following Injection of Uroselectan B, Brit. J. Radiol. 13:291-292 (Aug.) 1940.
8. Pendergrass, E. P., Chamberlin, G. W., Godfrey, E. W., and Burdick, E. D.: A Survey of Deaths and Unfavorable Sequelae Following the Administration of Contrast Media, Am. J. Roentgenol. 48:741-762 (Dec.) 1942.
9. Foulds, L.: Production of Transplantable Carcinoma and Sarcoma in Guinea-Pigs by Injections of Thorotrast, Am. J. Cancer 35:363-373 (Mar.) 1939.
10. MacMahon, H. E., Murphy, A. S. and Bates, M. I.: Endothelial-Cell Sarcoma of the Liver Following Thorotrast Injections, Am. J. Path. 58:585-611 (July) 1947.
11. (a) Blades, B. and others: Complications of Injection of Thorotrast in the Carotid Artery, Arch. Surg. 58:60-74 (Jan.) 1949. (b) Reeves, D. L. and Stuck, R. M.: Clinical and Experimental Results with Thorotrast, Medicine 17: 37-73 (Feb.) 1938.
12. Pennybacker, J. and Russell, D. S.: Necrosis of the Brain Due to Radiation Therapy, J. Neurol., Neurosurg. and Psychiat. 11:183-198 (Aug.) 1948.
13. (a) Hamby, W. B.: Spontaneous Subarachnoid Hemorrhage of Aneurysmal Origin, J.A.M.A. 136:522-528 (Feb. 21) 1948. (b) Richardson, J. C. and Hyland, H. H.: Intracranial Aneurysms, Medicine 20:1-83 (Feb.) 1941.
14. List, C. F. and Hodges, F. J.: Angiographic Diagnosis of Expanding Intracranial Lesions by Vascular Displacement, Radiology 47:319-333 (Oct.) 1946.
15. List, C. F. and Hodges, F. J.: Differential Diagnosis of Intracranial Neoplasms by Cerebral Angiography, Radiology 48:493-508 (May) 1947.

toma[16]. Surface hematomas displace the middle cerebral artery medially and the anterior cerebral artery to the opposite side. However, except for the rare hematoma located in an unusual position, the performance of bilateral temporal trephination is a safer diagnostic procedure and is of more therapeutic value, since a hematoma found in performing trephinations can be removed at that time.

If an angiographic film shows the normal curve of the anterior cerebral artery around the genu of the corpus callosum to be widened, internal hydrocephalus may be suspected[14]. Ventriculography, however, is more valuable than angiography in the diagnosis of such abnormalities.

Cerebral thrombosis and cerebral hemorrhages

The diagnosis of cerebral thrombosis[17] by angiographic methods is often inconclusive and not without hazard. Injection of any irritating substance into a partially thrombosed artery may accentuate the process. Furthermore, unless the cerebral vessels are exceptionally well filled, the specific absence of filling of the middle cerebral artery or one of its large branches is not conclusive evidence of thrombosis. Failure of the anterior and posterior cerebral arteries to fill is not necessarily indicative of thrombosis, since this occurs frequently in normal individuals.

Occasionally intracerebral blood clots resulting from cerebral vascular hemorrhages are localized by this type of study.

Contraindications

In general, the absence of a strong indication for angiography is a contraindication. The percentage of angiograms showing definite abnormalities should, therefore, be high. Diodrast angiography should not be used in individuals who are sensitive to iodine preparations, nor, as a rule, in individuals with arteriosclerosis.

In certain patients with severe arteriosclerosis, a strong indication for angiography may exist. The use of Thorotrast in such cases might be justifiable, provided the operator is virtually assured of technical success with one or two injections and an open technique is used.

16. Kristiansen, K.: Cerebral Angiography in the Diagnosis of Intracranial Hematomas, Surgery 24:755-768 (Nov.) 1948.
17. Wechsler, I. S. and Gross, S. W.: Cerebral Arteriography in Subarachnoid Hemorrhages, J.A.M.A. 136:517-521 (Feb. 21) 1948.

Case Reports

Case 1

Figure 1 is an arteriogram of an 8 year old girl with a tumor near the midline, causing slight hydrocephalus. In the lateral view (fig. 1a), the middle cerebral artery (MC) appears to pass directly toward the parietal region in a normal pattern. The anterior cerebral artery (AC) is in normal position. Its curve around the corpus callosum is a little wider than normal, but this is a good example of a normal arteriogram. However, in the anteroposterior view (fig. 1b), the middle cerebral artery is seen to extend laterally from the internal carotid artery to the Sylvian fissure, where it appears on the surface of the brain, while the anterior cerebral artery (AC) maintains a normal midline position.

Case 2 (Fig. 2)

This patient, a 51 year old man, was admitted to the hospital in a comatose condition, after an illness of six months' duration. Neurologic examination revealed bilateral papilledema and spasticity of the left extremities. The arteriogram disclosed a large tumor in the right temporal lobe which, at craniotomy, was found to be a glioma.

In the lateral view (fig. 2a), the middle cerebral artery (MC) is seen to be displaced upward, and in the anteroposterior view (fig. 2b) it is displaced medially; the anterior cerebral artery (AC) is shifted to the left in the anteroposterior view.

Case 3 (Fig. 3)

This patient, a 23 year old housewife, had been having severe frontal headaches for eight months, and her vision had been failing for six weeks before admission. She was found to have severe bilateral papilledema, but no localizing neurologic signs. A ventriculogram showed a tumor of the left temporal lobe. At craniotomy a tumor was found, and overlying it, a large arteriovenous communication. The abnormal vessels were ligated, but excision of the tumor was not undertaken because of its position in the dominant temporal lobe. The arteriogram was done in order to reveal any remaining abnormal vascular connections. This lateral view shows the middle cerebral artery (MC) to be displaced forward and upward by the temporal lobe tumor. Silver clips, evident in the illustration, are those used for hemostasis during the intracranial operation.

Case 4 (Fig. 4)

This patient, a 56 year old man, had been having severe headaches for four weeks. Bilateral papilledema and slight weakness of the left extremities were found. Skull films showed the pineal gland to be shifted to the right. The arteriogram disclosed a mass containing clusters of fine, irregular vessels (indicated by arrows) deep within the temporal region. This vascular pattern is characteristic of highly malignant gliomas. It was possible to localize the tumor and to diagnose the type from the arteriogram; at craniotomy, a glioblastoma multiforme was found arising from the paraventricular tissue in the right temporal lobe.

Case 5 (Fig. 5)

This patient, a 50 year old man, had been admitted to a psychiatric hospital because of paranoid ideas and feelings of unreality. He was found to have papilledema, and was transferred to to the North Carolina Baptist Hospital. The arteriograms demonstrate a tumor of the frontal lobe which has displaced the anterior cerebral artery

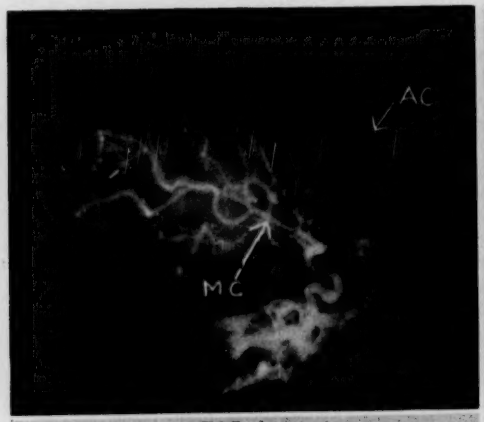

FIG. 1a

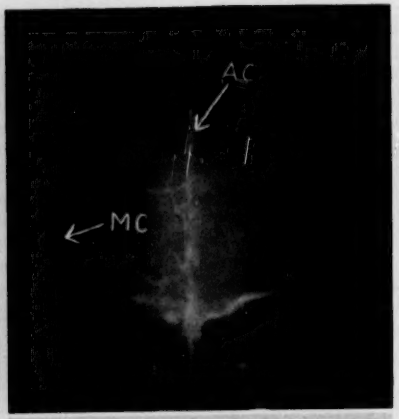

FIG. 1b

FIG. 2a

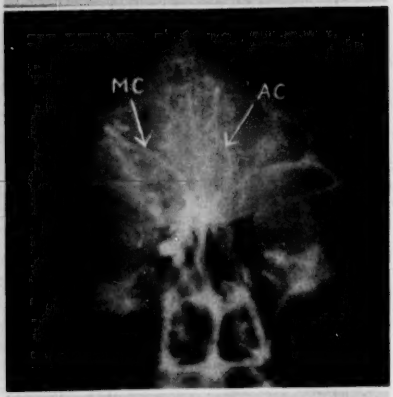

FIG. 2b

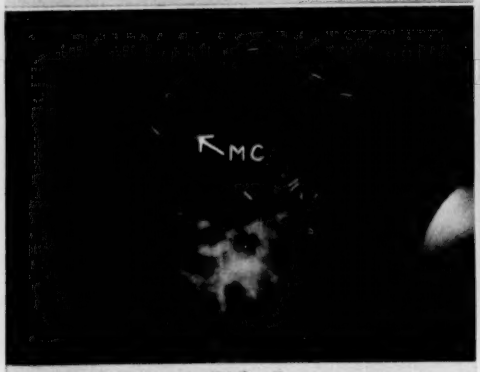

FIG. 3

FIG. 4

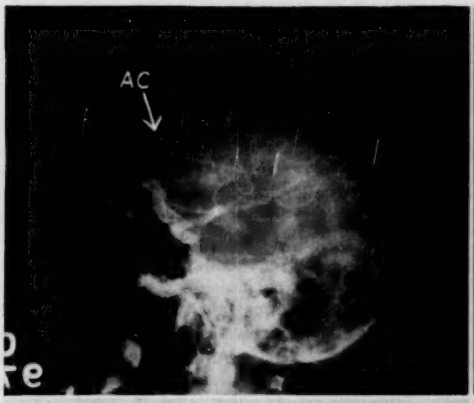

FIG. 5 a

FIG. 5 b

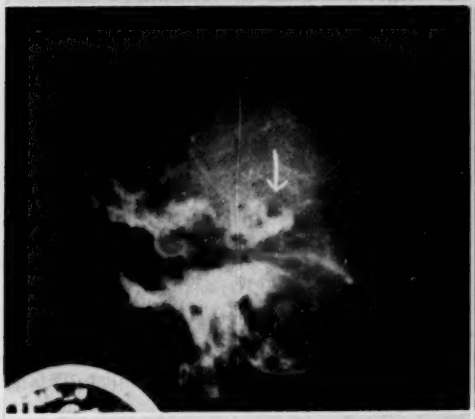

FIG. 6

FIG. 7

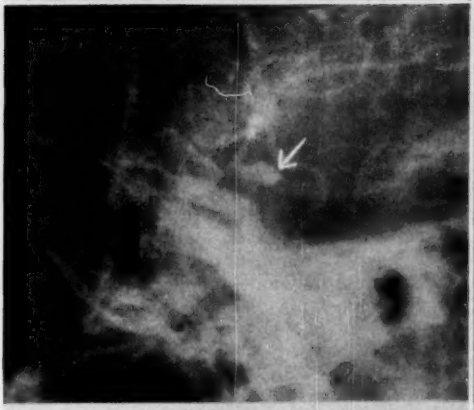

FIG. 8 a

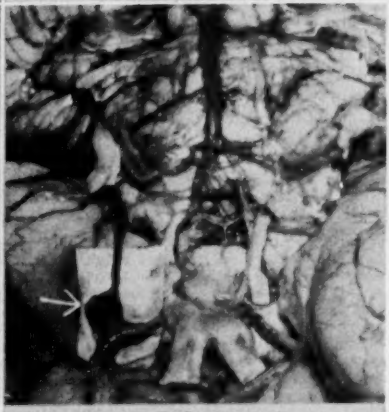

FIG. 8 b

downward in the lateral view (fig. 5a) and to the right in the anteroposterior film (fig. 5b). The middle cerebral artery is displaced downward (fig. 5a). A left frontal craniotomy revealed a large glioblastoma multiforme in the left frontal lobe. In this instance, the characteristic tumor pattern of the malignant gliomas was not demonstrated.

Case 6 (Fig. 6)

This patient, a 22 year old housewife, had an acute episode of "numbness" in the right arm, followed by speech difficulties. Examinations disclosed a weakness of the right extremities and an angioma in the left ocular fundus. This carotid arteriogram demonstrates multiple, large arteriovenous communications deep within the brain. The anterior and middle cerebral arteries are not well seen in this film, most of the Diodrast being in the arteriovenous angioma.

Case 7 (Fig. 7)

This 53 year old woman had been losing her vision gradually for five years. She had occasional headaches. Skull films showed a circular calcification above the sella turcica. The arteriogram revealed a lobulated aneurysm of the internal carotid artery in the region of the optic chiasm.

Case 8 (Fig. 8)

This 40 year old man was admitted following a spontaneous subarachnoid hemorrhage. The arteriogram disclosed an aneurysm of the internal carotid artery (fig. 8a) at the origin of the posterior communicating artery. The position and size of the aneurysm are shown in the anteroposterior view (fig. 8b). The patient died shortly after ligation of the common carotid artery.

Summary and Conclusions

(1) Cerebral angiography has become a useful tool in the diagnosis of intracranial lesions.

(2) It is of particular value in demonstrating vascular abnormalities of the brain. It is a useful adjunct to ventriculography in the diagnosis and localization of intracranial neoplasms, and, in certain instances, can replace air studies.

(3) The contraindications and dangers associated with the use of this method of investigation have been outlined. In spite of its relative safety, it should be used only when definitely indicated.

Group practice offers many advantages. With the pooling of office facilities and equipment there can be a reduction in overhead costs, and what is more important, it does permit doctors to have more time for recreation and study. Most general physicians are working too long hours with insufficient holidays . . . I urge that serious consideration be given by more men, especially the younger men, to the setting up of partnerships. In saying this I am not forgetting that there still is a very important place for the solo player, the rugged individualist who can and does carve out a career alone by hard endeavour.—W. V. Johnston: General Practice in the Changing Order, Canad. M. Assoc. J. 59:168, 1948.

WHAT DOES THE FAMILY PHYSICIAN EXPECT FROM A SPECIALIST?

CLYDE T. HARDY, JR.*

WINSTON-SALEM

There has developed within recent years a new (for our generation) respect for, and encouragement of, men in the general practice of medicine. We are keenly aware now that, without the general practitioner as the "keystone" of medical care, the real medical needs of most patients, in the broadest sense, would not be met in the less personal and more formal atmosphere of the specialist's office. All future planning for the improvement of medical care must first take into consideration the needs of the family physician and those of his patients.

The patient will always need the general practitioner. His is the responsibility for the promotion of health and well-being, the prevention of illness, the regular examination, and referral to the specialist when this is indicated.

Working as a team, the family doctor and the specialist have their responsibilities to each other and for the welfare of the patient. The family doctor must intelligently refer his patient to a specialist when a need arises. He must give to the specialist the information regarding the patient that will be of value in arriving at a diagnosis or undertaking therapy. Beyond this point, the responsibility shifts to the specialist. This report concerns the obligation of the specialist to the family physician.

The percentage of patients who need highly specialized care is small. According to a study recorded in the *North Carolina Medical Journal*, 85 per cent of patients can be cared for by the family doctor with the contents of his bag[1]. The family doctor needs detailed advice on his problem cases, since he may see instances of rare diseases only once every year or two. He must rely on the specialists for the performance of new and skilled techniques, not only in surgery but in medical treatment and in diagnosis. Often, of course, only an opinion or advice is needed to support his diagnosis or to enable him

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1. The General Practitioner and His Handbag, Editorial, North Carolina M. J. 1:320 (June) 1940.

better to handle a problem he thoroughly understands.

Results of a Survey Among Physicians Who Refer Patients to Specialists

Realizing the importance of the family doctor to the specialist, the Private Diagnostic Clinic of the Bowman Gray School of Medicine recently undertook a survey among the doctors who refer patients to the clinic. The purpose of this study was to help the members of the group to understand the wishes and requirements of the referring doctors concerning their patients. A letter and questionnaire were sent to 250 family doctors throughout North Carolina. One hundred and twenty-eight questionnaires were returned. The answers given were most helpful and informative, not only to the group directly involved, but to every doctor who accepts patients referred by other doctors.

The detailed analysis of the results of this survey is being reported in a journal where it can reach group practice clinics throughout the nation[2]. Certain conclusions and observations are worthy of consideration here.

In the questionnaire the doctors were asked essentially the following questions:

1. Why do you send patients to a specialist or a medical center?
2. What do you want done to your patient?
3. How do you want conclusions and recommendations transmitted to you?

From the results of the study, definite answers can be given to these questions.

Reasons for referral

The patient is referred by the family doctor because he presents a problem that can be better handled either through the particular training of the specialist or with the aid of the superior equipment and technical assistance available to the specialist in his office or in the medical center. Basically, this is the only reason for referring a patient. Of course, as one doctor pointed out, when a patient is sent to a specialist with no organic disease, it does not necessarily mean that the family doctor made a mistake. He may want to convince the patient of this fact.

2. Hardy, C. T., Jr.: The Responsibility of the Medical Center to the Family Physician. Submitted to The Modern Hospital.

Management of patient

Many doctors, in referring a patient, will specifically state, "Proceed with surgery or medical treatment as indicated." In such cases, the course is clear. The family doctor wishes the specialist to take over. In most cases, however, the family doctor prefers to have his patient returned to him for treatment unless specialized care is needed—or, in any event, to be consulted before any treatment is undertaken. Referral of a patient to a surgeon, for example, does not imply that the surgeon should automatically proceed with indicated surgery. It is true that the surgeon who knows his referring physicians well usually knows their wishes regarding this matter. He must be certain that he does.

The specialist must exercise constant care to avoid treating a patient for a condition which can be cared for at home, except by specific request of the referring physician. This statement also applies to incidental findings during examination which have not been mentioned by the referring physician. The telephone is a handy instrument. In an emergency case, or when the patient wants immediate care, good will can be created by telephoning the family doctor, telling him of the situation, and asking his advice.

Several doctors pointed out in their replies to the questionnaire that too little thought is given to the difficulties of traveling long distances. If the patient is from out of town, the specialist should not require him to make unnecessarily frequent visits. The matter of return visits may usually be left to the discretion of the referring physician.

Transmission of reports

Nothing is more important to the family physician than a prompt and complete report of the specialist's findings and recommendations for treatment. Throughout the replies to the questionnaire this fact came out again and again. The doctors were quite precise in outlining the data needed to make a good and complete report. Such a report should include:

a. History as it specifically applies to the problem
b. Physical findings
c. Special studies
d. Diagnosis
e. Suggested therapy

f. Copy of pathology report, if any

g. Copy of operative report, if any

Most family doctors prefer that reports be as brief as possible to include all important information. They are too busy to read verbose reports. A report must be prompt. If not, the patient is dissatisfied and is a source of worry to the referring physician. One physician, in replying to the questionnaire, made this comment: "We, as general practitioners, do not have access to newer methods of treatment or diagnosis as does a specialist, particularly in a medical center; so more emphasis on these would be appreciated."

Another excellent suggestion was that, if a report is to be delayed for some reason, the patient should be told, so that he will not report back to the referring doctor too early. It is always a good idea to suggest to the patient when he should report back to his referring physician. If treatment, begun by the specialist, is to be on a continuing basis, a note should accompany the patient back to his doctor, or the doctor should be telephoned when the patient is discharged.

If a patient is referred to a second specialist by another, it is wise for the second to get the name of the family physician and send a report to him as well as to the referring specialist. On occasion, a patient may go to a specialist without a direct referral. Under these circumstances, the obligation to the family doctor is not lessened. In fact, the specialist must make a definite effort to point out to the patient the necessity of cooperation with his doctor at home. The specialist may never be needed again, but the family doctor is constantly needed.

The Importance of Good Relations Between Specialists and Referring Physicians

It is extremely important, if a specialist wishes to build up a referral practice, that he cooperate wholeheartedly with his referring physicians. He cannot survive without them. It is much too easy for a doctor with longer and specialized training in a nationally known center to feel somewhat critical of the way medicine is practiced in the rural districts. Great care must be taken to avoid implied or spoken criticism of the patient's referring doctor. The fact that the family doctor refers the patient to the specialist is a compliment that should be appreciated. It is not good policy for the specialist to enhance his own prestige at the expense of the family doctor. It is to the latter that the patient must look for his routine care. If a specialist destroys faith in the family doctor, he has done the patient, the doctor, and himself a disservice.

It is not recommended that every specialist send a questionnaire to all his referring physicians to find out if his relations with them are satisfactory. It is essential, however, that the specialist give himself a mental quiz at frequent intervals and be certain that he is doing as good a job as possible, both for his patients and for their doctors.

Summary

The referring doctor does not want anything unreasonable. He wants his patients to be seen as soon as possible, and emergencies taken care of immediately. He wants to be notified before treatment or operation is undertaken. He wants prompt and complete reports. He prefers that his patients not be told that they have been treated poorly in the past, and he would like to have his patients returned to him in as good condition and state of mind as possible.

COMPLETE HEART BLOCK WITH A VENTRICULAR RATE OF SEVENTY AFTER MYOCARDIAL INFARCTION

Report of a Case Showing All Degrees of Heart Block

RICHARD S. POLLITZER, M.D.

WINSTON-SALEM

The case to be reported is one of complete heart block with a relatively rapid idioventricular rate occurring after a myocardial infarction. All degrees of heart block were observed in this patient, who recovered from the infarction.

Report of a Case

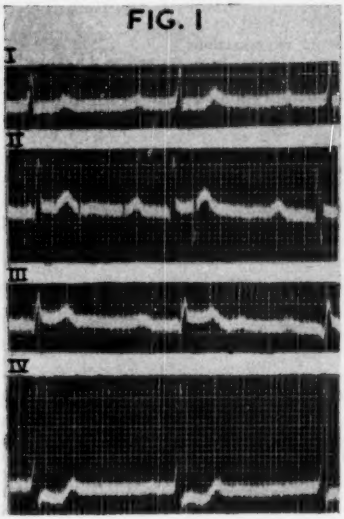
A 59 year old white man was admitted to the North Carolina Baptist Hospital on May 3, 1948, complaining of severe epigastric and substernal pain of about two hours' duration. The pain, which had begun following a paroxysm of coughing, radiated down the left arm. It was accompanied by dizziness and nausea.

Past history

The patient had had mild hypertension for several years. In 1944 his blood pressure was 150 sys-

From the Department of Internal Medicine, Bowman Gray School of Medicine of Wake Forest College and the North Carolina Baptist Hospital, Winston-Salem, North Carolina.

FIG. 1



tolic, 85 diastolic. An electrocardiogram made at that time showed a regular rhythm, with a rate of 100 per minute, and no evidence of myocardial disease. More recently, he had complained of palpitation, exertional dyspnea, and orthopnea. An electrocardiogram made on October 10, 1947, showed a regular rhythm, a rate of 104 per minute, Q waves in leads 2 and 3, and low-voltage T waves in all leads; it was interpreted as showing probable myocardial disease.

A chronic cough developed, which was worse on reclining. Beginning December 11, 1947, he was given Digalen, one U. S. P. unit three times a day for one week, then one unit daily thereafter. This dosage was maintained until the day of admission.

Physical examination

The temperature was 98.4 F., the pulse 52, respiration 18, blood pressure 130 systolic, 85 diastolic. The patient was a well developed and well nourished man who lay quietly in bed but was obviously apprehensive. There was a malar flush. Percussion of the chest suggested that the heart might be slightly enlarged to the left, but the heart tones were quiet. No rubs were audible. The aortic second sound was greater than the pulmonic. There was slight gaseous distention of the abdomen. The lungs were clear and there was no edema.

Accessory clinical findings

The hemoglobin was 15 Gm. per 100 cc., the leukocyte count 11,200 per cubic millimeter, with 71 per cent segmented neutrophils, 2 per cent eosinophils, 8 per cent lymphocytes, 8 per cent monocytes, and 11 per cent non-segmented neutrophils. The corrected sedimentation rate was 15 mm. in an hour on admission, but rose to 30 mm. in an hour on the fourth hospital day. Roentgenographic and fluoroscopic examination of the chest showed diminished cardiac pulsations and dilatation of the thoracic aorta; the heart did not appear enlarged.

An electrocardiogram made on admission showed a first degree auriculo-ventricular block, with a PR interval of 0.28 to 0.32 second, and a rate of 57 (fig. 1). It is possible, however, that this actually represented a second-degree block with half the P waves buried in the T waves, an auricular rate of 114, and a ventricular rate of 57; this possibility is suggested by the fact that the PT intervals equal the TP intervals in this tracing. Q waves were present in leads 2 and 3, and the ST segments were depressed in leads 1 and CF_4 and elevated in leads 2 and 3. These changes were interpreted as suggesting a recent infarction of the posterior wall of the left ventricle.

Four days later, after the patient had had no digitalis for three days, an electrocardiogram showed complete auriculo-ventricular block with an auricular rate of 130 and a ventricular rate of 70 per minute (fig. 2). The P waves could be seen best in lead 3. Q_3 was deeper than in the previous tracing, the ST segment in CF_4 was more depressed,

FIG. 2

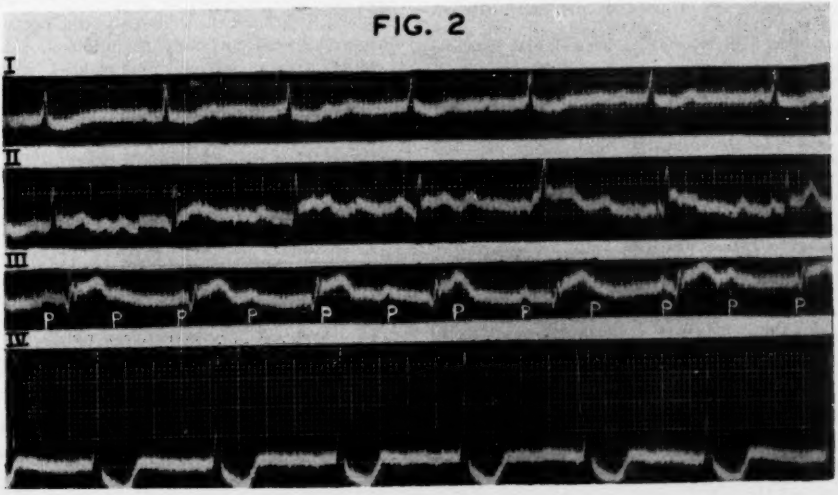
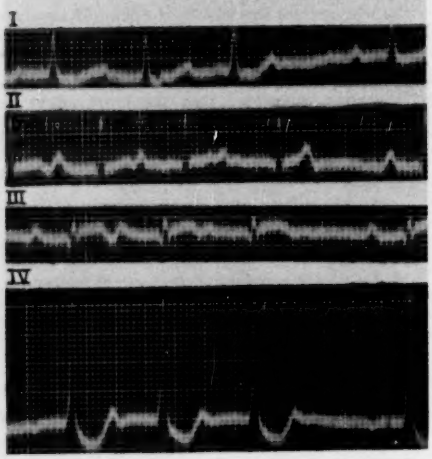


FIG. 3



T_1 was flat, T_3 was lower, and T_4 was indiscernible. These changes were construed as evidence of recent infarction of the posterior myocardium, plus digitalis effect

By the tenth day, the patient having had no further digitalis, the block was second-degree in type (fig. 3), demonstrating Wenckebach's sign. The block varied between a 5:4 ratio and a 4:3 ratio. The auricular rate was 110 and the ventricular rate 80. T_3 was lower.

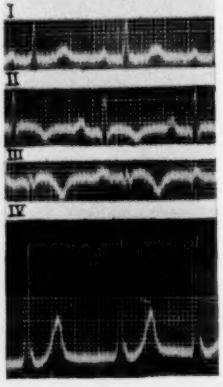
On the seventeenth day (fig. 4) the block was first degree in type, with a PR interval of 0.22 second and a rate of 75. There was a deep, "coronary-type" T wave in lead 3, and a very high T wave in lead CF_4.

On the twenty-third day, the PR interval was 0.19 second, and the rate was 102.

Course in the hospital

Digalen was discontinued on admission. The patient was placed at complete bed rest and given meperidine hydrochloride (Demerol) and barbiturates. His radial pulse rate fell to 49 per minute on the eighth day, but rose thereafter. His temperature reached 99.8 F. on the third day, but came down to normal by the end of the second week. His blood pressure fell to 100 systolic, 70 diastolic about five hours after admission; thereafter it gradually rose, averaging about 125 systolic, 85 diastolic during the remainder of the period of hospitalization.

FIG. 4



On the twenty-third day he was given three oral doses (0.2 Gm. each) of Digitora (powdered leaf digitalis). These were repeated on the next two days, and he was maintained thereafter on 0.1 Gm. each day. He was discharged on the forty-first hospital day.

Follow-up examinations

The patient was re-examined on August 2, 1948, at which time he was having mild dyspnea. An electrocardiogram showed that the T waves in leads 2 and 3 were returning toward normal.

On November 3, 1948, six months after his infarction, he was well except for mild dyspnea. An electrocardiogram showed a rate of 90 per minute, with a regular rhythm.

The Incidence and Etiology of Complete Heart Block

Complete heart block can probably be observed in about 1 or 2 per cent of electrocardiograms. In an electrocardiographic series of 10,000 patients, White[1] found complete auriculo-ventricular dissociation in 79. In a series of 1024 patients with cardiovascular symptoms or signs, electrocardiograms disclosed 22 cases of complete heart block[2].

Heart block may occur as a complication of myocardial infarction[3]. It is said to be relatively common with infarction of the diaphragmatic surface[4]. Sprague[5] found one case of idioventricular rhythm in an electrocardiographic study of 61 cases of coronary occlusion. In another group of 1028 cases of coronary disease, 5 showed complete heart block[2].

Apparently it is unusual to observe all three grades of heart block in one individual after infarction, especially in non-fatal cases[3].

Complete heart block is often due to coronary disease. In a series of 72 patients with complete heart block, 9 had angina pectoris without clinical coronary thrombosis, 4 had coronary thrombosis without angina, and 3 had both[2]. In another group of 22 cases of complete heart block, clinical evidence of coronary disease was found in 5[2]. In a third series of 27 cases of complete heart block, 56 per cent were due to arteriosclerosis[2a].

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Idioventricular Rates in Complete Heart Block

The idioventricular rate is usually slow in complete heart block, ranging in most cases from 20 to 50 per minute[1,4,6].

The idioventricular rate tends to be faster in young people, in cases of auricular flutter or paroxysmal auricular tachycardia with complete block, and in cases of intoxication due to certain drugs.

In Yater's series of cases of *congenital heart block*, the rates varied from 20 to 90[7]. In an infant, the rate was 85 to 95[8]. In a series of 9 patients under 30 years of age the rates ranged from 40 to 55; in one patient, whose rate was usually about 50, an overdose of thyroid produced a rate of 80[9]. Other cases of heart block in young people have shown rates varying from 40 to 65[10].

In a case of *auricular paroxysmal tachycardia* with complete block, a ventricular rate of 84 was recorded[11].

Digitalis may increase or decrease the cardiac rate[1,12]. Excessive slowing may indicate an overdosage of digitalis, and may be due to complete auriculo-ventricular dissociation[13]. However, toxic doses of digitalis may also produce heart block with a rapid idioventricular rate[14].

Several cases in which toxic doses of digitalis produced rapid idioventricular rates have been reported. In such cases idioventricular rates of 60 to 70[14], 96 to 145[15], and 160[16] have been recorded; one patient showed a paroxysmal tachycardia of nodal origin with a ventricular rate of 165 and an auricular rate of 125[17].

It seems highly improbable that digitalis intoxication could have played any part in the production of the rapid rate in our patient, since he had been receiving only maintenance doses, and these had been discontinued three days before this finding appeared.

In the majority of cases of *post-infarction heart block*, the ventricular rate is slow. A partial examination of the recent literature indicates that most of the reported cases of complete heart block after infarction have showed slow ventricular rates ranging from 28[18] to 60[3]. In 1931, Sanders reported the case of a 58 year old physician who had an occlusion of a coronary artery complicated by complete heart block with an idioventricular rate of 70[19]. This patient did not survive the attack.

Summary

A case of complete heart block with a ventricular rate of 70 after myocardial infarction has been presented. This is evidently one of the fastest idioventricular rates ever reported after a non-fatal infarction, except for the rare cases of paroxysmal tachycardia and tachycardia due to drug-intoxication.

The case is also unusual in that recovery occurred after all degrees of heart block had been demonstrated.

The author wishes to express his appreciation to Drs. Robert L. McMillan, Manson Meads, and S. Gilbert Blount for their help in the preparation of this report.

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Aggravation of hypertension.—If there is the slightest tendency toward hypertension, it may be aggravated by a reduction in interest level, with a concentration upon unpleasant possibilities. Consider the patient with coronary disease who is told by his doctor that he must go straight to bed, do little or nothing at all for a time, and then take things gradually, very gradually, and he may—not will, but may—live five years. Rest in bed and momentary relief from responsibility may be indispensable, but the way it is accomplished may spell the difference between success or making a bad matter worse.—C. Charles Burlingame: Good Psychiatry Is Good Medicine, J. Michigan M. Soc. 48:1020 (Aug.) 1949.

ACUTE NONOBSTRUCTIVE RENAL INSUFFICIENCY WITH UNUSUAL ELECTROCARDIOGRAPHIC FINDINGS

Recovery Following Fluid Restriction and the Use of Intravenous Procaine

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In acute renal insufficiency due to "lower nephron nephrosis" the suppression of urinary output is due to a specific pathologic lesion which apparently is primary in the renal tubules. This lesion may be of an inflammatory, degenerative, or obstructive nature, and consists of focal areas of degeneration and necrosis, heme casts, thromboses of thin walled veins, and secondary inflammatory reactions. Although Lucké[1] feels that these lesions are restricted to the lower sections of the nephron, others feel that probably the entire tubule is affected.

This pathologic picture may be produced by a wide variety of conditions[1,2]: transfusion reaction, blackwater fever, transurethral prostatectomy, quinine idiosyncrasy, sulfonamide sensitivity, carbon tetrachloride and mushroom poisoning, crush syndrome, non-traumatic muscle ischemia, electrical injury to muscle, heat strokes, alkalosis from excessive vomiting, thermal burn, uteroplacental damage after abortion, and toxemias of pregnancy.

The mortality rate in this condition has been estimated at around 90 per cent by Lucké[1], and around 40 per cent by Muirhead and his co-workers[3]. Lucké also determined the survival time in 100 fatal cases, and reported that 95 per cent of his patients succumbed within fourteen days, while no deaths were reported after twenty days.

Pathologic Physiology

Many problems are presented by the patient with acute renal insufficiency. Shock, which may be subclinical, probably is always present initially. The patient may have nausea, vomiting, and malaise, followed by the sudden or gradual onset of anuria or oliguria.

Since the gastrointestinal disturbances usually present prohibit oral feedings, the body stores are rapidly depleted. After the carbohydrate supply is exhausted, catabolism of proteins and fats increases. This catabolism, plus anuria, leads to the accumulation of potassium, sulfates and phosphates, and the development of acidosis, ketosis, and uremia. The blood calcium levels fall as the phosphates rise. Edema or dehydration may develop, depending upon the fluid intake. Usually there is a progressive rise in blood pressure. Deaths often result from pulmonary edema or potassium intoxication rather than from acidosis or uremia. In the patients who survive, diuresis usually begins around the fourteenth day, although it may be noted any time between the second and the sixteenth day.

It is generally felt that, if life can be maintained for two or three weeks after the onset of anuria, tubular regeneration will bring about a return of function in the majority of cases. It has been stated[2] that this tubular regeneration begins on the third or fourth day, and may be adequate to restore renal function by the tenth day of the illness. After diuresis begins, renal function may be expected to return to prenephrotic levels[4] in three to six months.

Methods of Treatment

Perfusion and other methods

This disorder has been treated by many methods. The perfusion systems[5] are aimed primarily at the removal of uremic wastes, but considerable difficulty is encountered in the necessarily exact control of fluid-electrolyte balance, and the patient may develop pulmonary edema or potassium intoxication very rapidly. Peritoneal lavage[5a,b] not only has the added hazard of peritonitis, but can-

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not be used where abdominal adhesions exist or after recent abdominal surgery. The artificial kidney is quite complex[5c], and is not available in most localities. Intestinal irrigation[5d] is difficult to manage because of nausea, vomiting, abdominal distention, and the selective absorption of electrolytes through the intestinal wall.

Renal decapsulation has been done, but after careful analysis, Culpepper and Findley[6] concluded that this procedure does not improve the recovery rate. With therapy by means of cross transfusion and replacement transfusion there is the danger that a transfusion reaction may produce additional renal damage. Recently the deliberate production of edema in order to dilute the toxic products of uremia has been advocated[7], but this increases the possibility of fatal pulmonary edema. Other forms of therapy that have been suggested and employed include intravenous hypertonic sodium sulfate, spinal anesthesia, diathermy to the kidney, and irrigation of the renal pelves through ureteral catheters.

Conservative regimen

A conservative regimen was first advocated by Wakeman[8], and has since been used with good results by Kugel[4], Muirhead[3,9], Burnett[10], Strauss[2], and Snapper[11]. Under this regimen, if shock is present initially, it is combatted by the use of plasma or saline. When oliguria or anuria develops, fluid intake is restricted markedly. Insensible water loss will amount to approximately 1000 cc. a day; about half this loss is compensated by preformed water and water of oxidation, leaving a fluid deficit of approximately 500 cc. daily. Enough fluids to make up this deficit are given intravenously in the form of a 15 per cent solution of dextrose in either distilled water or saline. It has been shown[2] that the administration of 100 Gm. of glucose daily will reduce the accumulation of nitrogenous waste products, potassium, sulfates, and phosphates by about half.

During the period of diuresis, the quantity of fluid administered should, if possible, be made to exceed the output by 500 to 800 cc. Careful determinations of the blood and urinary chlorides are important in controlling fluid therapy during diuresis. The nonprotein nitrogen usually does not begin to fall until several days after the onset of diuresis. Anemia frequently becomes apparent during diuresis; however, carefully matched transfusions should be given only if absolutely necessary.

Regardless of the therapeutic program used, there are many hazards to cope with. If potassium intoxication exists, it may be combatted by the administration of calcium and sodium. In the event of pulmonary edema or congestive failure, sodium should be restricted and the patient should be digitalized. Acidosis may be handled by the intravenous administration of sodium lactate or by giving sodium bicarbonate through the gastric tube. The progression of the uremia may be appreciably altered by the administration of glucose. We feel, as did Fine and his co-workers[5], that maintenance of the electrolyte balance is more important to survival than treatment of the uremia.

The problem of therapy for acute renal insufficiency has not yet been settled. It should be stressed that each case must be handled individually, and that no set regimen will cover all the problems. We feel, however, that the conservative regimen is the most logical one, and it was employed successfully in the case to be reported.

Report of Case

The patient, a 51 year old white man, had been anuric for five days when he entered the North Carolina Baptist Hospital on April 29, 1949. Beginning eleven days prior to admission, he had been given sulfadiazine (1 Gm. every four hours) for four days because of an upper respiratory infection. Anuria developed two days after sulfadiazine therapy was discontinued. The patient was admitted to his local hospital, where the renal pelves were irrigated and he was given between 1200 and 1500 cc. of intravenous fluid daily. At the time of his transfer to the North Carolina Baptist Hospital, his nonprotein nitrogen was 126 mg. per 100 cc., and he was semi-comatose.

There was no past history of allergy or drug idiosyncrasy, and he had not had any sulfonamide drugs before. There was no history of previous renal damage, although it was learned later that the urine had shown a 1 plus reaction for albumin

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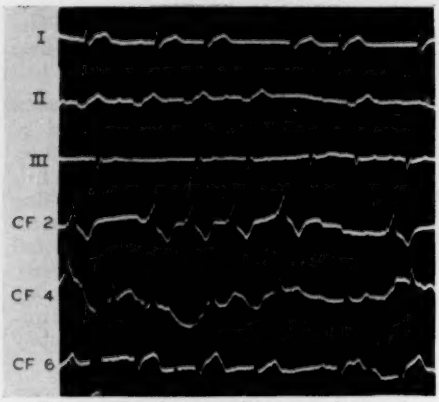

Fig. 1. The electrocardiogram made on admission shows an irregular, slow rhythm due to intermittent sinoauricular block (compatible with potassium intoxication). The QRS complexes are spread; right bundle branch block is present.

when sulfonamide administration was begun.

The rectal temperature was 98 F., respiration 12, pulse 52, blood pressure 105 systolic, 60 diastolic. The patient was in a semi-comatose state; the respiration was Cheyne-Stokes in type and the breath had a uremic odor. The pupils were pin point in size and did not react to light. Funduscopic examination revealed only mild arteriosclerotic changes. The neck veins were markedly engorged. The right diaphragm was elevated, and a few rales were heard above it. The heart was enlarged to the anterior axillary line; the rhythm was grossly irregular, but no gallop rhythm was present. The first heart sound at the apex was very faint. The abdomen was markedly distended, but no organs, masses, tenderness, or fluid could be demonstrated. A few purpuric spots were noted on the extremities, but no edema was present. The tendon reflexes were hypoactive and equal, and the Babinski sign was positive bilaterally.

A roentgenogram of the chest made on admission showed marked cardiac enlargement and a high diaphragm on the right. The electrocardiogram revealed changes which were compatible with potassium intoxication (fig. 1). On cystoscopy 7 cc. of grossly bloody urine was obtained. This was found to contain a trace of albumin and many red cells and white cells, but no sulfonamide crystals.

Ureteral catheters were placed in both pelves, and lavage was carried out for three days, when the ureteral catheters were replaced by an indwelling catheter in the bladder. Figure 4 shows the amounts and types of fluids administered, as well as the urinary output and significant laboratory findings. As this chart shows, the fluid intake was markedly restricted until the fifth hospital day. Procaine was administered intravenously on the fourth, fifth, and sixth hospital day. On the fourth hospital day the patient excreted 15 cc. of urine, and on the following day, 170 cc. The diuresis began on the tenth day of anuria, but the patient showed no evidence of clinical improvement in his cardiovascular state or

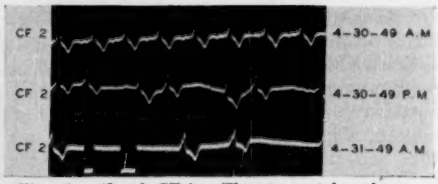

Fig. 2. (Lead CF_2). The top strip shows normal sinus rhythm and no evidence of potassium intoxication. In strips 2 and 3 no definite evidence of atrial activity is seen, although occasionally questionable P waves are found. The QRS complexes and T waves vary slightly in the record and may indicate changes in potassium concentration.

sensorium until the sixth day of diuresis. He was in an oxygen tent and frequent tracheal suction was necessary until the seventh day of diuresis. From the third to the sixth day he remained in deep coma and had muscle fasciculations.

On the twelfth hospital day the rectal temperature rose to 102.8 F., and it was felt that pneumonitis was developing in spite of the daily administration of 50,000 units of penicillin. The pneumonitis cleared up promptly when the dose of penicillin was increased to 600,000 units daily. A lower urinary tract infection with **Proteus ammoniae** developed on the sixth hospital day, and was treated with Chloromycetin, 0.25 Gm. every three hours for twelve days. At the end of this time his temperature was normal and the urine culture was negative.

On admission the hemoglobin was 12.5 Gm. per 100 cc. and the red cell count was 3,510,000. These values fell slowly until the fifteenth hospital day, when the hemoglobin was 8 Gm. and the red cell

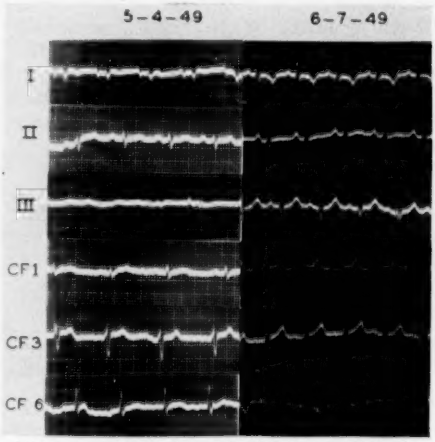

Fig. 3. The record on the left was obtained on the sixth hospital day, when the bundle branch block disappeared. Comparison with the record on the right shows higher voltage and T wave changes. These records may indicate residual myocardial damage.

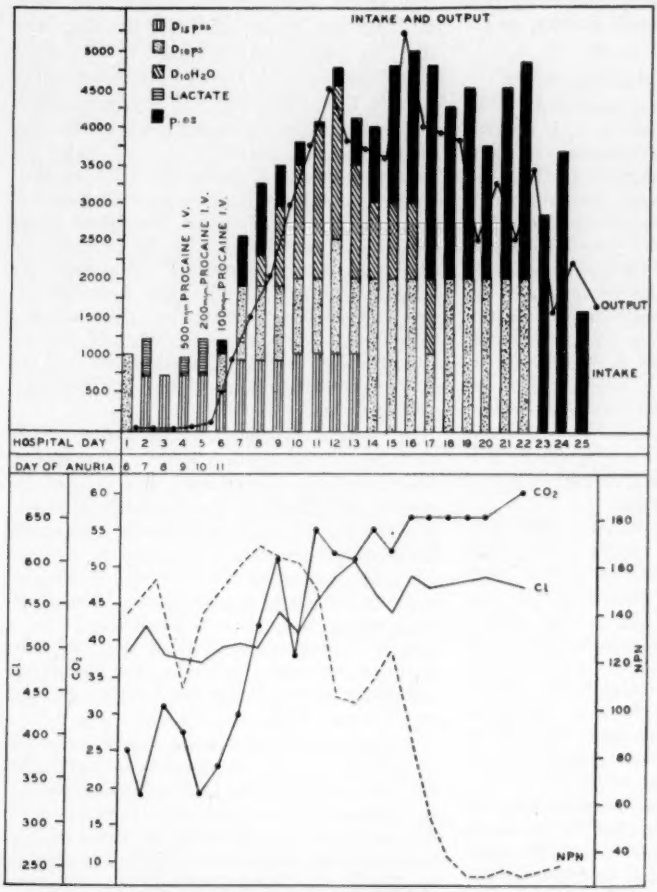

Fig. 4. The therapeutic measures and intake and output of fluids are shown above, and the electrolyte levels below.

count 2,500,000. A phenolsulfonphthalein test on the twelfth day of diuresis revealed an excretion of 11.5 per cent in two hours. Eight days later 42.5 per cent was excreted in two hours. Microscopic examination of the urine at the time of discharge showed an occasional red and white cell in the centrifuged sediment. At that time the urine was negative for albumin. The specific gravity ranged from 1.008 to 1.013. Urinalysis six weeks after discharge gave essentially the same findings.

Examination of the patient at this time failed to reveal any physical findings of note. The patient was feeling well, and was up and about. A phenolsulfonphthalein test made at this time showed a total excretion of 45 per cent, and the electrocardiogram more nearly approached normal. The hemoglobin had risen to 10 Gm.

Comment

This case has several interesting features, in addition to the fact that the patient recovered. There were rather striking cardiac and electrocardiographic findings, which will be discussed later. The degree of "potassium intoxication" could be readily estimated at the bedside from the cardiac rate and regularity. Electrocardiography verified the clinical impression that changes consistent with "potassium intoxication" were present when the rate was below 60 and were not present when the rate was above 70. The degree of pulmonary edema could also be determined clinically. Determinations of the carbon dioxide combining power, serum chlorides, and nonprotein nitrogen were observed as often as four times daily in an attempt to follow, as closely as possible, the therapeutic needs.

Intravenous procaine was given because Friis[12] has reported good results from the use of this drug in cases of sulfathiazole anuria. Procaine is known to have a favorable effect on arrhythmias of the heart and on the sympathetic nervous system; in addition, it is of value in the therapy of many allergic disorders[13], and there is a possibility that the renal damage in this condition

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may be an allergic manifestation. We felt that its administration would at least do no harm.

Therapeutic measures and their control

The therapeutic measures employed in this case and the methods used for their control are shown in figure 4. Pulmonary edema, which we attempted to avoid by limiting the water and salt intake, never developed to a degree that necessitated digitalization. Potassium intoxication, which was believed to be present on admission (though it was not confirmed by blood studies) was combatted by the administration of sodium and calcium. The patient received 2 Gm. of calcium gluconate daily by vein. Sodium was given intravenously as physiologic saline and as sodium lactate, and by gastric tube as sodium bicarbonate. These measures brought about a rather marked cardiac response, as evidenced by the increase in the heart rate and electrocardiographic changes.

The acidosis, which was a considerable problem during the first few days in the hospital, was managed primarily by the intravenous administration of sodium lactate (fig. 4) and, when necessary, by giving sodium bicarbonate through the gastric tube. Progression of uremia was controlled by the administration of glucose through the gastric tube and 15 per cent dextrose in saline intravenously. Procaine was given in doses of 500, 200, and 100 mg. intravenously on successive days, as indicated in figure 4.

Serum and urinary chlorides were watched carefully during diuresis, but no excessive excretion or retention was found. The nonprotein nitrogen continued to rise steadily for seven days after admission, reaching a peak of 173 mg. per 100 cc. on the third day of diuresis; it then fell progressively to normal levels before discharge.

Cardiovascular manifestations

The cardiovascular manifestations of this patient's anuric state presented two distinct problems which were managed on the basis of clinical signs and without digitalis. The first problem was the marked cardiac enlargement on admission with engorgement of the neck veins. Venous pressure on the third hospital day was 270 mm. of water. For about five days this condition was maintained with little change, but on the second day of diuresis the heart sounds were noted to have changed abruptly in quality. The first apical heart sound, which had been faint, became louder, and over the next few days the quality of the sound more nearly approached normal. The heart size decreased 3 cm. in forty-eight hours. The engorgement of the neck veins decreased less rapidly; the venous pressure was 212 mm. of water on the fourth day of diuresis, but it fell rapidly thereafter, and on the twenty-sixth hospital day was 78 mm. of water. The blood pressure, which was 90 systolic, 50 diastolic on admission, reached a peak of 160 systolic, 80 diastolic on the eighth hospital day and fell slowly thereafter to 140 systolic, 60 diastolic. In spite of the marked elevation of venous pressure and cardiac dilatation, the patient never presented clinical evidence of true congestive failure.

The second problem was the effect of potassium on the myocardium[14]. During the first few days the rhythm was grossly irregular and slow. On every occasion the administration of sodium chloride converted the rhythm to regular and increased the cardiac rate, but after six to twelve hours the irregularity would appear again. This effect is shown on the electrocardiograms (figs. 1 and 2). The irregular rhythm was probably not true auricular fibrillation, but rather intermittent sinoauricular block with irregular nodal escape beats.

P waves could be found occasionally on almost all records. At first it was thought that the spread of the QRS complex was due to "potassium intoxication." However, this did not vary to any extent in spite of the fact that the auricular activity responded readily to the administration of saline. On the second day of diuresis, coincident with the abrupt change in cardiac size and sounds noted clinically, the bundle branch block was replaced by normal intraventricular conduction. The T waves at no time showed the marked changes typical of "potassium intoxi-

14. (a) Finch, C. A., Sawyer, C. G., and Flynn, J. M.: Clinical Syndrome of Potassium Intoxication, Am. J. Med. 1: 357-352 (Oct.) 1946. (b) Tarail, R.: Electrocardiographic Abnormalities in a Case of Uremia Manifesting Hyperpotassemia, Am. Heart J. 35:665-673 (April) 1948. (c) Tarail, R.: Relation of Abnormalities in Concentration of Serum Potassium to Electrocardiographic Disturbances, Am. J. Med. 5:828-837 (Dec.) 1948. (d) Katz, L. N.: Electrocardiography, ed. 2, Philadelphia, Lea and Febiger, 1946. (e) Stewart, H. S., Shepard, E. M., and Horger, E. L.: Electrocardiographic Manifestations of Potassium Intoxication, Am. J. Med. 5:821-827 (Dec.) 1948. (f) Langendorf, R., and Pirani, C. L.: The Heart in Uremia: An Electrocardiographic and Pathologic Study, Am. Heart J. 33:282-307 (March) 1947. (g) Keith, N. M., Burchell, H. B., and Baggenstoss, A. H.: Electrocardiographic Changes in Uremia Associated with a High Concentration of Serum Potassium; Report of Three Cases, Am. Heart J. 27:817-844 (June) 1944.

cation," but the changes were those seen with bundle branch block. Therefore, we feel that the varying P wave changes are the best electrocardiographic evidence of potassium intoxication. The changes in the QRS and T waves usually seen with potassium intoxication were obscured by the acute cardiac dilatation which produced right bundle branch block.

Follow-up electrocardiograms showed a gradual increase in voltage of the QRS complex and more inversion of the T wave. The second record in figure 3 was made two weeks after discharge and showed little change from the last record in the hospital. It is uncertain whether or not the T wave changes represent permanent damage to the myocardium; certainly we could not diagnose a confluent area of infarction. Follow-up electrocardiograms may help answer these questions.

Summary

1. A case of acute non-obstructive renal insufficiency ("lower nephron nephrosis") due to sulfadiazine sensitivity is reported. Recovery took place following the onset of diuresis on the tenth day of anuria.

2. The authors advocate conservative management of anuria, with fluid restriction and the administration of relatively large amounts of glucose solution. In the absence of facilities for detailed and repeated electrolyte balance studies, therapy may be governed to a great extent by careful clinical observations.

3. The value of intravenous procaine in such cases deserves further study, since the renal lesion may be on an allergic basis.

4. It is believed that the electrocardiographic changes due to "potassium intoxication" were partially obscured by the changes due to acute cardiac dilatation, but they could be recognized.

The differential diagnosis of diarrhea.—The actual time of day or night when the patient has to empty the bowel is of considerable importance. Thus it is probably safe to say that, if diarrhea disturbs the patient at night during sleep, the cause is organic, whereas in my experience it is rare for functional diarrhoea to do so. Early morning diarrhoea is suggestive of some lesion in the rectum, such as carcinoma, or of the sprue syndrome. When it occurs immediately after a meal it may be simply due to intestinal hurry owing to an over-excitable small bowel (lientric), or the patient may be allergic to something in his food.—W. Lindsay Lamb: The Investigation of Chronic Diarrhoea in Adults, Edinburgh M. J. 55:205 (April) 1948.

ASCITES PROBABLY DUE TO RUPTURE OF A PANCREATIC PSEUDOCYST

Report of Two Cases

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WINSTON-SALEM

So far as I have been able to learn, no case of ascites due to rupture of a pancreatic cyst or pseudocyst has been reported in the medical literature. Bockus[1] has stated that "Destructive lesions of various intra-abdominal organs may result in a direct outpouring of blood, cyst fluid, or contained material, producing a collection of fluid in the peritoneal cavity." In the list of diseases which may cause ascites he named "rupture of hollow viscus (stomach, intestine, urinary bladder, or gallbladder)," but did not mention the pancreas.

The three cases to be reported were all seen in the North Carolina Baptist Hospital between 1943 and 1947. In cases 2 and 3 ascites which is believed to have been due to rupture of pancreatic pseudocysts was present on admission. Ascites never developed in the first case, but the findings in this patient help to explain the occurrence of free abdominal fluid in the other two.

Case Reports

Case 1

This 48 year old housewife had been a known diabetic for ten years. For two years before admission to the hospital she had had frequent episodes of severe upper abdominal pain, which were relieved by a hypodermic of morphine and atropine. Inasmuch as her gallbladder had been removed more than ten years previously and no satisfactory explanation of her attacks could be found, she was suspected of being too fond of the needle.

On February 13, 1943, she had an unusually severe attack. When I saw her, she was lying on her back with her knees drawn up on her chest, groaning with every breath and complaining bitterly of pain in the epigastric region radiating through to the back. A hypodermic was given, and blood was drawn for a serum amylase determination. This was found to contain 452 Somogyi units of amylase per 100 cc.

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1. Bockus, H. L.: Gastroenterology, Philadelphia, W. B. Saunders Co., 1946, v. 3, pp. 210-211.

She was admitted to the North Carolina Baptist Hospital, and continued to have pain for four or five days. On February 15 a mass could be felt in the right upper quadrant. This steadily increased in size, until on February 18 it was felt as a large, oval, fluctuant mass extending from the right costal margin to the crest of the ilium. Aspiration by Dr. A. D. Valk obtained practically pure blood which contained neither aerobic nor anaerobic organisms. The mass gradually subsided and her general condition improved until she was discharged on March 9.

On February 15 the serum amylase was 552, but by February 20 it was within normal limits—85 Somogyi units. Her temperature ranged between 99 and 102.4 F. for the first ten days, then subsided to a normal range. The leukocyte count was 9950 on admission. This was the highest total count recorded. Just before she was discharged, the count was only 4700. The differential count was within normal limits throughout.

During the first week in the hospital it was impossible to control the diabetes. Saline was given intravenously, together with liquids by mouth after the second day, and insulin as deemed advisable. On February 23 she was put on a regular diabetic diet.

After leaving the hospital she was free from pain for two months; then her attacks began to recur and, as before, required hypodermic medication. With the attacks she vomited most of the food she had eaten at the previous meal, and she began to complain of fullness in the epigastrium after meals. In July, 1943, she was again admitted to the hospital, and a roentgenogram showed "a marked pressure deformity of the pylorus and duodenum and lesser curvature border of the stomach with obstruction. . . . The appearence is characteristic of a gastro-hepatic type of pancreatic cyst."

At operation, however, it was found that the obstruction was due to a dense mass of adhesions which was obstructing the pylorus and duodenum. These were freed and the abdomen was explored. The liver was moderately enlarged; the pancreas was rather smaller than normal and, according to the surgeon's notes, was "felt to be atrophic."

After a few months of comparative comfort the recurrent attacks of epigastric pain began again. Further serum amylase determinations, however, were within the lower limits of normal—48 to 67 Somogyi units. The diabetes was poorly controlled except when the patient was in the hospital, and she began to have marked psychotic symptoms. These may have been due to repeated hypoglycemic shocks, since she was careless about the dosage of insulin as well as about her diet. Eventually her severe attacks of pain subsided, but the psychoneurotic symptoms grew worse.

She has moved to another town, but I have heard from her physician a number of times. She is still a psychoneurotic problem. Her last serum amylase determination, as reported by her physician, was only 12 Somogyi units — suggesting that her pancreas had reached the fibrotic stage indicated by the findings at operation.

Case 2

A 21 year old divorcee was admitted to the North Carolina Baptist Hospital on July 23, 1947. Six months before admission she began having dull, aching mid-epigastric pain radiating toward the left upper quadrant and associated with occasional episodes of nausea and vomiting. Six weeks prior to admission the abdomen began to swell rapidly. Two paracenteses had been done before her admission to this hospital, and each time a large amount of fluid—she thought "about a gallon and a half"—was withdrawn. This was said to have been bloody.

The patient stated that her past health had been good. She was married at 17. Soon after her marriage a three months' pregnancy was interrupted by an abortion, which was apparently without complications. She said that for a number of years she had drunk several highballs three or four nights a week.

Physical examination was negative except for an apical systolic murmur and marked ascites. The proctoscopic examination was negative. The abdomen was tapped twice, on July 24 and July 31. The first time 9000 cc. of fluid was obtained, the second time 3000 cc. The first fluid was tinged with red, the second was straw colored. Both fluids were sterile, and no tumor cells were found. The first fluid obtained had a specific gravity of 1.012, and contained 20,000 red blood cells and 1,150 white blood cells per cubic centimeter, with a differential count of 50 per cent lymphocytes and 50 per cent polymor-

phonuclears. The second fluid, drawn a week later, had a red cell count of 40,000 and a white cell count of 2650, with 23 per cent polymorphonuclears, 34 per cent lymphocytes, 6 per cent monocytes, 34 per cent eosinophils, and 1 per cent basophils.

The first blood count showed 5,300,000 red blood cells, a hemoglobin of 12 Gm., and 10,000 white blood cells, with 23 per cent eosinophils. During her stay in the hospital the leukocyte count ranged from 6,500 to 29,400, and the percentage of eosinophils from 8 to 45. The final count on discharge showed 10,250 white blood cells with 35 per cent segmented polymorphonuclears, 3 per cent nonsegmented, 33 per cent eosinophils, 27 per cent lymphocytes, and 2 per cent monocytes. Repeated urinalyses were negative, and liver function tests were within normal limits. The most significant laboratory finding was persistent elevation of the urinary amylase, the values ranging from 232 to 495 Somogyi units.

The blood Kahn test was negative. A phenolsulfonphthalein kidney function test showed 70 per cent excretion in two hours; the Fishberg concentration test revealed a specific gravity of 1.026. A bromsulfalein liver function test showed no retention of dye in forty-five minutes. Total serum proteins were 5.6 Gm. per 100 cc., with 3.2 Gm. of albumin and 2.4 of globulin. The icterus index was 3 units, and the prothrombin time 16 seconds, against a control of 13 seconds. The stool examination was negative for occult blood and parasites.

A roentgenogram of the chest was negative except for obliteration of the left costophrenic angle by old adhesions. An intravenous pyelogram was reported negative. Roentgen study of the stomach, duodenum, small bowel, and colon was negative except for some hypermotility of the small bowel, with narrowing throughout the greater portion of its length.

While in the hospital the patient had several episodes of abdominal pain, but they gradually decreased in severity and frequency. After the most severe attack of pain the serum amylase reached its highest point, 495 Somogyi units. Her temperature ranged from normal to 103 F., and the pulse was in proportion.

She was discharged on October 3, 1947. She had then been afebrile for a week, and no free fluid could be demonstrated in her abdomen.

Some time after she was discharged from the North Carolina Baptist Hospital, this patient vomited bright red blood on a few occasions, and she continued to have moderate pain in the epigastrium and in the left subcostal region and flank. She entered the Hospital of the University of Virginia at Charlottesville on February 19, 1948. To Dr. H. B. Mulholland I am indebted for the rest of the story.

A blood count made on admission showed 3,400,000 red cells, and 8400 white cells, with 68 per cent segmented polymorphonuclears, 24 per cent small lymphocytes, 5 per cent transitional monocytes, 2 per cent eosinophils, and 1 per cent basophils. The serum lipase, bleeding and clotting time, bromsulfalein test, and serum amylase were within normal limits. A roentgenogram of the stomach revealed a mass in the cardia, the nature of which could not be determined.

An exploratory operation was performed on March 1, 1948, through a transthoracic approach. Dr. Mulholland stated that "A large, irregular mass was felt beneath the diaphragm. The diaphragm was opened, exposing a nodular, agglutinated, inflammatory appearing mass which involved the spleen and stomach. The spleen was freed up from the rest of the mass and in this process a cavity containing a thick, yellow, grumous material was entered. This appeared to be an old chronic abscess in the side of the spleen. The spleen was then removed and its pedicle ligated. After the spleen had been removed, the stomach was more accessible, and on palpation there was a firm, rounded mass which was continuous with the large, irregular mass, and this now appeared to be arising from the tail of the pancreas. It could not be separated from the left kidney. It was found to contain numerous cavities filled with fluid and the same yellow, grumous material found attached to the spleen. It was impossible to remove the entire mass, but it was thought to be a chronic pancreatitis with multiple abscess formation. The anterior wall of the fundus of the stomach was then opened and the mucosa carefully examined. At the point where the extrinsic mass was palpated, the gastric rugae were flattened out, but it was completely covered with a normal appearing

layer of gastric epithelium. It was felt that there probably had been ulceration at this point which accounted for the gastrointestinal hemorrhages.

"The patient was discharged on the 14th of March, 1948. She returned to the Outpatient Department on the 26th of April, 1948, when her blood amylase was 26, and she felt quite well. A gastrointestinal x-ray at that time was negative. We have not heard from her since 1948, but in the middle of the year, she seemed to be doing quite well."

Case 3

An 8 year old boy was admitted to the pediatric service of the North Carolina Baptist Hospital on October 14, 1947, with a history of abdominal swelling of three weeks' duration. The abdomen had been tapped twice in another hospital. The first time, three quarts of fluid were removed; at the second paracentesis, one quart was obtained.

The mother stated that since he was 18 months old he had had "vomiting spells," with severe colicky pain, coming at intervals of two to five months and lasting two or three days. Eight weeks before admission he had had an unusually severe attack of vomiting.

When the boy was admitted to the hospital, his temperature was 99.6 F., the pulse 132, blood pressure 108 systolic, 50 diastolic. Marked abdominal swelling, apparently due to free fluid, was the only important finding on physical examination.

Laboratory findings were as follows: hemoglobin 14 Gm., red blood cells 4,900,000, white blood cells 11,150, with 62 per cent segmented polymorphonuclears, 6 per cent nonsegmented, 1 per cent eosinophils, 27 per cent lymphocytes, and 4 per cent monocytes. Platelets were adequate, and no parasites were seen. The corrected sedimentation rate was 32 mm. in an hour. Nonprotein nitrogen was 30 mg. per 100 cc., total serum proteins 5 Gm. (albumin 3.5, globulin 1.5). The icterus index was 2 units. A bromsulfalein liver function test showed no dye retained at the end of thirty minutes. Urinalysis was negative. A tuberculin test, using old tuberculin 1:1000, was negative.

A paracentesis was done soon after admission, and 6600 cc. of grossly bloody fluid was obtained. It was sterile, but contained numerous red and white cells, with polymorphonuclears predominating.

The x-ray department reported negative findings on an intravenous pyelogram, a gastrointestinal series, and a barium enema examination.

The boy's temperature continued to range from 98 to 100.4 F., and the fluid began reforming rather rapidly. On October 23—the tenth day after admission—an exploratory laporatomy was performed. On opening the abdomen 4900 cc. of amber colored fluid was recovered, and considerably more escaped the suction. In the upper abdomen many light adhesions between the omentum and peritoneum, and between a few loops of small bowel were found. These were easily broken up. The organs in the abdomen were explored, and all were found to be normal except the pancreas. It was not enlarged, but its head contained several nodules. One of these was removed for biopsy. The pathologist's report on the biopsy was: "These are sections of pancreatic tissue in which the islets and glandular cells are present. The glandular elements occur in small islands and there is considerable scarring between and around these islands." The diagnosis was "chronic pancreatitis with scarring."

Following the operation, from which he made a good recovery, the boy was given three roentgen treatments over the midepigastrium—160 r. in air at each treatment—for their possible beneficial effect upon the pancreatitis. He was also put on a high protein, high calorie diet, with supplementary vitamins. No further paracentesis was necessary, and apparently the fluid did not reform.

The first serum amylase determination was made on October 28, and was definitely elevated—362 Somogyi units. This elevation persisted throughout the rest of his stay in the hospital, the serum amylase ranging from 330 to 401 Somogyi units.

After his discharge from the hospital the patient returned at regular intervals until June 6, 1949, when he was finally dismissed. He had a few episodes of vomiting, but these came at longer intervals. On his last visit to the hospital, he had vomited only once in six months. His weight had increased from 72 pounds to 109½ in twenty months, and his general condition was good. In February, 1948, his serum amylase was 190 units. On subsequent visits it was within normal

limits. The last recorded reading (January 3, 1949) was 70 units. Urinalyses and blood counts were also normal at this time.

Comment

All three of these patients gave histories quite characteristic of recurrent pancreatitis. In each case the serum amylase determinations and the operative findings confirmed the clinical diagnosis. The history of the first patient makes it seem quite likely that in each of the last two cases a pseudocyst had formed and ruptured. In the first case a huge pseudocyst formed within five days after the severe attack of pain, and disappeared in an almost incredibly short time. The aspiration proved that it contained sterile bloody fluid. Because of its relatively enormous size, its walls must have been quite thin and under tremendous pressure. If the patient had had a violent fit of coughing or vomiting, it is likely that it would have ruptured. Fortunately she had neither.

Both of the other patients, however, vomited repeatedly. If it be assumed that each of them had had a pancreatic pseudocyst following pancreatitis, it is quite easy to understand that the increased pressure caused by vomiting could have caused this to rupture. The well known tendency of pancreatic juice to cause both hemorrhage and irritation would explain the bloody fluid obtained from both patients by paracentesis.

The fact that in the first case no trace of the cyst was found at operation less than five months after it was aspirated would help to explain the operative findings in the last two patients.

No explanation is offered for the eosinophilia present in case 2. It is quite interesting to note that the differential count had reverted to normal within the four and one half months that elapsed between this patient's discharge from the North Carolina Baptist Hospital and her admission to the University of Virginia Hospital.

In retrospect, it is easy to see that the fluid aspirated from the cyst in the first patient, and that recovered by paracentesis in the other two cases should have been examined for their content of amylase and possibly for other pancreatic hormones. In spite of the lack of this confirmatory evidence, however, I feel that there can be little doubt regarding the pancreatic origin of the fluid in all three cases.

Summary

Two cases of ascites, presumably due to ruptured pancreatic pseudocysts, and a third case of a pancreatic pseudocyst which did not rupture are described. It is believed that these are the first cases of ascites from ruptured pancreatic cysts to be reported.

PITYRIASIS ROSEA

Report of Atypical Case with Systemic Manifestations

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As a rule pityriasis rosea is an acute, self-limited, eruptive disease, characterized by superficial scaling maculopapules of varying size (fig. 1). The lesions are usually round, oval, or circinate, and the color varies from rose to fawn. The eruption is usually limited to the area covered by a bathing suit (1890 style).

The disease is most common in young adults, but may be seen at any age or in either sex. In most cases a single lesion—the so-called herald plaque—precedes the general outbreak by seven to fourteen days. The exact immunologic significance of this sequence is not entirely clear. The early symptoms may be so mild that the primary lesion escapes recognition until the eruption is fully developed. At the height of the disease the cutaneous lesions may become quite conspicuous, especially over the trunk, clavicles, ribs, and scapulas. Less frequently the exposed surfaces of the face and hands are involved. There is little induration and the patches appear quite superficial. The oval lesions are often located along the lines of cleavage, and the distal ends appear slightly frayed. The scales are usually dry and furfuraceous.

There may be mild to moderate pruritus, and in acute cases the itching may become severe. Mild constitutional disturbances — headache, moderate elevation of temperature, congestion of the fauces, and slight enlargement of the submaxillary and cervical glands—may occur.

Pityriasis rosea usually runs its course in four to six weeks. The duration of the eruption may be shortened and the symptoms ameliorated by proper treatment.

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Fig. 1. Superficial scaly, oval, erythematous lesions in the posterior cervical region.

Fig. 2. The herald plaque, involuting, may be seen just below the eye.

Fig. 3. Photograph of the anterior chest and cervical region showing multiple round, scaly, superficial lesions with clearing in the center.

The etiology of this disease is not known. The incidence is greater in the spring and fall. Some authors have noted that physical fatigue or severe nervous stress may be a precipitating factor. There is some evidence to suggest an infectious basis for this disease.

Histopathologic studies show edema in the upper cutis and papillary bodies. There is a perivascular infiltrate of leukocytes, lymphocytes, and occasional plasma cells. Slight acanthosis and a varying degree of parakeratosis are present. In short, the pathologic picture is often not diagnostic and may vary considerably, depending on the stage of evolution of the lesion chosen for biopsy.

The following case is presented because of several unusual aspects: (1) severe constitutional symptoms (frontal headache, apprehension, nausea and vomiting), (2) extreme and uncontrollable pruritus, and (3) atypical distribution of the cutaneous eruption, the primary lesion being located on the right infraorbital region (fig. 2). It is possible that the proximity of the primary lesion to the cerebrum might account for the severe systemic manifestations.

Report of a Case

A 38 year old white woman was first seen July 1, 1949, with an erythematous, maculopapular, oval plaque measuring 3 by 4 cm. on the cutaneous surface of the right lower eyelid and the adjacent area (fig. 2). It was covered by a superficial fawn-colored scale and showed some clearing in the center. About the anterior cervical region and upper anterior portion of the chest there were multiple lesions of a similar character but of shorter duration and smaller size (fig. 3).

The right submaxillary and right anterior cervical lymph nodes were enlarged and slightly tender. There was crepitation in an old depressed scar near the upper outer quadrant of the right buttock. This scar resulted from an injection in childhood.

According to the history, the primary lesion had preceded the eruption in the cervical region by approximately fourteen days. There had been some pruritus since the onset of the eruption, but the itching had increased to severe intensity. For this reason, and because of extreme apprehension, frontal headache, nausea and vomiting, the patient was admitted to the hospital.

Many new lesions continued to develop, especially about the trunk. The maculopapular lesions about the neck became edematous and more erythematous.

The systemic symptoms persisted, and heavy sedation was required. Some relief of the pruritus was afforded by hydrolyzed starch baths, resorcinol-glycerin lotion, and antihistamine preparations. It was necessary to give intravenous glucose in saline because of the nausea and vomiting. Analgesics and narcotics failed to relieve the frontal headache.

On the fifth day of hospitalization there developed a generalized, profuse, erythematous, punctate, papular eruption which was most marked on the abdomen. These lesions were not pruritic and caused the patient little discomfort.

The past medical history included a severe illness in childhood, an appendectomy at the age of 14, thrombophlebitis of the left saphenous vein at 26, obstruction of the left kidney at 30, undulant fever at 31, and removal of a rectal fistula and cervical polyps at 37. Shortly before the onset of the present eruption she had been troubled with pain in

the joints, especially the shoulder. She had had four pregnancies, all normal except for slight uterine bleeding for seven months during the third pregnancy. The family history and the marital and social histories were non-revealing. The patient felt that she had always been a somewhat nervous individual, but could not recall any definite psychic traumatic incidents.

The hemoglobin was 14 Gm., the red cell count 4,620,000, the white cell count 8000, with a normal differential except for a relative lymphocytosis. Blood sugar, chlorides, and calcium determinations were normal. The sedimentation rate (Wintrobe method) fluctuated from 8 to 14 mm. in an hour. An agglutination test for brucellosis was negative.

A biopsy of one of the lesions in the mid-dorsal region revealed the following findings:

"The epidermis was irregularly acanthotic. The edema was mostly intercellular with some intracellular involvement. The stratum corneum was thickened with some parakeratosis. The papillae were edematous, club shape and contained engorged capillaries. The inflammatory cell infiltration was largely confined to the region of the subpapillary plexus of vessels. A few eosinophils and plasma cells were included among the lymphocytes and fibroblasts which predominated."

After approximately one week of hospitalization the systemic symptoms improved and the cutaneous eruption began to subside. Moderate pruritus continued, and it was necessary to have the patient wear gloves in order not to traumatize the skin. Approximately four weeks after the onset of symptoms, the entire cutaneous integument was clear and the patient felt quite well.

Summary

An atypical case of pityriasis rosea is presented in which the systemic manifestations of headache, nausea, vomiting, and pruritus were more severe than usual. The primary lesion was located in the right infraorbital region—a site which is uncommon in this disease.

The tuberculosis mortality rate for 1947 was the lowest ever recorded in the United States. An even further reduction in the tuberculosis death rate in 1948 is indicated by the estimated rate of 30.3, based on a 10 per cent sample of death certificates.—Sara A. Lewis, Pub. Health Rep., April 1, 1949.

THUMBNAIL SKETCHES OF EMINENT PHYSICIANS

PHYSICIANS OF NORTH CAROLINA

MRS. J. C. TRENT, *Editor*
DURHAM

II

HUGH WILLIAMSON

Though Hugh Williamson was a Pennsylvanian by birth, he resided for a significant portion of his life in Edenton, North Carolina, and served that state in its House of Commons and as surgeon to its militia.

His father, John Williamson, a clothier of Dublin, emigrated to America about 1730 and settled in Chester County, Pennsylvania, where he married a young Irish girl, Mary Davison. Hugh, the eldest of their large family, was born on December 5, 1735. The Williamsons were industrious and energetic and prepared Hugh for the ministry, though from his early years as a student he showed a special aptitude for mathematics. He had his schooling at New London Crossroads and Newark, Delaware, and was in the first class graduated from the College of Philadelphia in 1757. After spending two years settling his father's estate in Shippensburg, he studied theology in Connecticut and was licensed as a preacher by the Philadelphia presbytery, though he was never ordained.

Despite this theological training, Williamson decided to turn to a scientific career and was appointed professor of mathematics at the University of Pennsylvania in 1760. He later resigned from this position in order to go abroad to study medicine. Since American medicine of the eighteenth century was predominantly under English influence, Williamson went to Edinburgh and to London. In Edinburgh he profited by association with the elder Monro, Whytte, Cullen, Home, Alston and Dr. John Gregory[1]. He rounded out his studies in Holland, Boerhaave's great area of influence, and received his M.D. degree at the University of Utrecht in 1772. He then returned to Philadelphia to start his medical practice.

1. Hosack, D.: Hugh Williamson, Essays on Various Subjects of Medical Science, v. 1, New York, J. Seymour, 1824, p. 151.

Williamson had broad interests, and as was true of so many eighteenth century scientists he took all knowledge as his province and had the courage to enter many varied fields of research. In 1768 he was elected to membership in the American Philosophical Society, and in the following year was appointed one of a commission to study the transits of Venus and Mercury. He developed an original theory regarding comets which is incorporated in "An Essay on Comets," published in the Transactions of the American Philosophical Society, volume 1, 1771.

In 1773 he undertook the task of collecting money from the West Indies and England for the Academy of Medicine at Newark, Delaware. While waiting in Boston to sail for England, he became acquainted with Adams, Warren, Otis, and other patriots[2]. He was a witness of the Boston Tea Party at that time and carried the news of it to England. Summoned before the Privy Council there, he urged England to use conciliatory tactics in handling the incident and warned them that further coercion on the part of Parliament might produce conflict. While in England he learned of the clandestine correspondence between Governor Hutchinson and a British cabinet officer plotting against America, and by a brilliant maneuver he seized the letters and turned them over to Benjamin Franklin. He was also the author of a letter to Lord Mansfield, entitled "The Plea of the Colonies," published anonymously in 1775 and written in the hope of maintaining friendship between America and the British Whigs.

Despite these intrigues and the exciting activities of the moment, Williamson had found time to engage in scientific experimentation with John Hunter, and one of the papers he worked on at that time was published in the Philosophical Transactions of the Royal Society, 1775. It was entitled, "Experiments and Observations on the Gymnotous Electricus, or Electric Eel."

Williamson left London for Holland following the Hutchinson letter incident, but he had not been there long when he received word of the Declaration of Independence. He embarked immediately for Philadelphia, hoping to obtain a post as army surgeon. Finding none available, he engaged in mercantile voyaging and moved his home to Edenton, North Carolina, where he built up a good West Indian trade and practiced medicine again. He offered his services to Governor Caswell and was sent to New Bern to inoculate troops against smallpox. As a result he became an enthusiastic advocate of inoculation as a protective measure in military medicine. He was made surgeon general of the state troops and attended the wounded at the Battle of Camden, receiving permission to enter the British line to treat American prisoners. He made an unsuccessful attempt to have the American prisoners inoculated, and wrote to Major England on August 30, 1780:

"I presume that Lord Cornwallis is informed that of the North Carolina Prisoners lately sent to Charles Town, who I apprehended are from 3 to 400, hardly a single man has had Small Pox. There is, I presume, the utmost danger of those men taking the Disease in the Natural way, unless well-inoculated. Be so kind as to inform me whether Lord Cornwallis is willing these Troops should be inoculated, and by whom he wishes it should be done . . ."[3].

Major Desmond replied two days later:

". . . I have had Lord Cornwallis's orders to acquaint you that, with respect to the American prisoners sent to Charles Town being inoculated, his Lordship will give proper orders."[4]

In his experiments with drainage and sanitation while encamped in the Dismal Swamp he achieved a remarkable record for that day, with only two deaths out of a force ranging from 500 to 1200 in number[5].

Ashburn says that unquestionably the medical man of Revolutionary times was more of a publicist and civil leader than physicians are now[6]. With the war at an end, Williamson entered upon a political career. His country's new political experiment was a challenge to him. He was elected from the borough of Edenton to the House of Commons in North Carolina for three years

2. Hosack, D. (1), p. 161.

2. Letter from Hugh Williamson to Major England, quoted in Gordon, M. B.: Aesculapius Comes to the Colonies, Ventnor, N. J., Ventnor Publishers, 1949, pp. 431-432.
4. Letter from Major Desmond to Hugh Williamson quoted in Gordon, M. B.: Aesculapius Comes to the Colonies(3).
5. Hamilton, J. G. de R.: Hugh Williamson, in Dictionary of American Biography, New York, Scribner, 1943, v. 20, p. 299.
6. Ashburn, P. M.: A History of the Medical Department of the United States Army, Boston, Houghton Mifflin, 1929, p. 3.

beginning in 1782, and served again in the same capacity from Chowan County in 1785 for a year. In 1786 he accepted an appointment to the Annapolis convention, and soon after wrote "Letters of Sylvius," published anonymously in the *American Museum* for August, 1787. These letters show the evils of paper money, recommend an excise rather than a land or poll tax, and advocate strongly the promotion of domestic manufacture and adoption of a national dress:

". . . We do not count it an honor to imitate the forms of government that prevail in Europe—Why should we think it honourable to imitate the fashion of their coats?"[7]

Williamson was appointed by Governor Caswell to the Federal Convention of 1787, and became an active participant. He supported a strong federal government, took a stand for a plural executive, a seven year term and re-eligibility, and played a large part in obtaining the compromise on representation in the two houses of Congress. He voted for the Constitution and worked hard for its ratification in North Carolina. He was elected to the First Congress in 1789, and was re-elected to the second.

In January of 1789 he married Maria Apthorpe of New York, and in 1793 he moved to that city to devote the remainder of his life to literary and scientific researches. In 1805 he published his "Report as Commissioner to Inquire in the Origin of the New York Yellow Fever Epidemic in 1805." His work on climate, "Observations on the Climate in Different Parts of America" (1811), was considered his best contribution to science, and this original paper secured him membership in the Holland Society of Science and the Society of Arts and Sciences of Utrecht, and an honorary degree from the University of Leyden[8]. His two volume history of North Carolina appeared in 1812.

Williamson was one of the original trustees of the University of North Carolina, a trustee of the College of Physicians and Surgeons and the University of the State of New York, a prominent member of the New York Historical Society, and a co-founder with DeWitt Clinton of the Literary and Philosophical Society of New York. His latter years were saddened by the death of his wife and two sons. His health failed, and he died while taking his accustomed afternoon ride on May 22, 1819.

Thomas Cary Johnson says that "Hugh Williamson of North Carolina and John Lining and Alexander Garden of Charleston were among the most celebrated of colonial scientists."[9] Williamson was a recognized scholar, an able physician, and a resourceful army surgeon, who, never hesitating to accept public duty and responsibility, participated actively in the social, cultural, and political life of the young United States.

M. B. T.

7. Letters of Sylvius, edited by W. K. Boyd, Historical Papers published by Trinity College Historical Society, series 15, Durham, N. C., 1915, Letter IV, p. 23.

8. Dr. Hosack(1) quotes Jefferson as saying of this contribution by Williamson:
"The memoir in the Philosophical Transactions, as the change of climate in America, I have ever considered as a remarkably ingenious, sound and satisfactory piece of philosophy." (p. 158)

9. Johnson, T. G.: Scientific Interests in the Old South, New York, D. Appleton Century, 1936, p. 10.

The psychoneurotic disabilities of peace which will constitute 50% or more of your future practices do not differ essentially from those encountered in war. Among your patients you will discover those whose disease should be called "no disease", whose illness is a result of selfishness and lack of courage, but among those suffering from functional complaints you will recognize disorders of psyche, distinct from ethical defects. I do not believe that we, as men of medicine, are qualified to judge others on an ethical plane but I do believe that it is our duty to scrutinize our personal as well as our national lives as though we were responsible citizens capable of distinguishing right from wrong. With death as the possible reward for possession of morale, the lack of it in battle can be understood. Can we, through some distorted psychiatric concepts, excuse the loss of civilian virtues—morals? Should we disguise our psychiatric failures and thus lose the scientific virtue —truth?—Alexander R. MacLean: "No Disease," Canad. M. Assoc. J. 56:324 (March) 1947.

The effect of psychiatry on ethics.—With . . . increasing popular recognition of the impact of an individual's past on his present and future behaviour, the ethics of our civilization have correspondingly been interpreted in freudian and behaviouristic terms. Morality is defined in words of instinct and the conditioned reflex, and this scientific language, although it does not change the essence of the thing described, serves to remove the stigma of amoral action. And yet if we are to admit that there are such qualities as courage and fortitude, we must equally insist that there are cowardliness and weakness of character. For if we turn our faces away from the possibility of unethical behaviour, the decorations of our men for valour in battle, and our verbally expressed appreciation of the sacrifices that men have made of their limbs and lives in the defence of their country, become worthless, hypocritical rewards given by a cynical people.—Alexander R. MacLean: "No Disease," Canad. M. Assoc. J. 56:322 (March) 1947.

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MEDICAL CARE INSURANCE FOR LOW INCOME GROUPS

On Sunday, March 5, the elected delegates of the Medical Society of the State of North Carolina met in Raleigh. The meeting was called in an attempt to solve some of the many perplexing problems involved in setting up an insurance plan which will provide for an equitable distribution of the cost of medical care, especially to families of low incomes.

The atmosphere in which the session was held was unique in the experience of the Society. At the opening of the meeting it came as a shock to the delegates to learn that, on the considered advice of those with experience in such matters, exact stenographic records of the discussion would not be kept. This precaution seemed necessary because of the threats, direct and implied, in the rifling of the A.M.A. offices, in the investigation under income tax laws of physicians who have dared to speak their opinions freely, and in the indictment under anti-trust laws of state and local medical societies. The fear of punitive action by the government hung over the delegates like a Sword of Damocles; in some instances it actually hindered the work of the Society.

Because of the possibility of anti-trust prosecution, the idea of permitting one of the Blue Cross companies in the state to handle the medical care insurance was abandoned in favor of a wide open competitive field for all types of insurance companies. This decision was made in spite of legal advice that the step was unnecessary. The wisdom of the plan, in an essentially rural state of relatively small population and with small groups of purchasers, will have to be determined by the test of time and actuarial experience.

Considerable progress was made in understanding and meeting the patient's needs. The delegates' decisions gave striking evidence that their first concern was, "What is best for the patient?" The doctors preferred a *service* policy which would protect the patient financially. Under such a policy the hospital and the physician agree to accept the fees guaranteed in the contract as complete payment for all charges incurred in the hospital during an illness. With this type of policy, it is impossible for the low income family to be wrecked financially by a single illness. The insurance companies preferred an *indemnity* policy. Under such a policy the company would pay the hospital and the physician stated amounts. The policy would contain a provision that this amount was in full payment only if the family's annual income was under a certain figure. If the income exceeded that figure, the patient understood that additional charges could be made. The policy would be sold to anyone, regardless of income, and it would be the physician's responsibility to determine the family's financial status each time the policy was used. The patient would not be protected in the event that the hospital or physician was not willing to accept the stated fees.

The physicians also wanted to write the policy as a "comprehensive" one which would cover home and office visits; they deferred to the business judgment of the insurance companies on that score, since the actuarial risk was not calculable. The plan as approved is not a "comprehensive" one. It would not cover home and office visits for ordinary illnesses which a family may anticipate. It is intended to provide for emergency treatment anywhere and for the care

of serious illnesses which require hospitalization—the financially catastrophic ones.

Several questions raised during the discussion must be seriously considered by members of the Society in order that as complete a meeting of minds as possible may be achieved. One of these questions was, "Who should qualify under the policy?" At the suggestion of the committee studying the problem, the House of Delegates accepted a recommendation to increase the top income level from $2400 to $3600 for families to whom the insurance would be sold as a *service* policy. Several insurance companies had proposed that the $3600 figure be interpreted to mean only the income of the wage earner who was the policy holder; it was estimated from the State Department of Labor figures that 75 per cent of the people in North Carolina would be covered if this yardstick were applied. Are 75 per cent of the inhabitants of our state in the low income group?

The delegation from Lenoir County pointed out that in their farm communities a cash income of $3600 stamps a family as well fixed financially, if not wealthy. How should farm income be calculated so as to include the real values accruing from rent, fuel, and food produced on the farm? A fair solution was offered—acceptance of the method of calculation used by Welfare Officers in North Carolina.

Progress was made in understanding the doctor's problems. Our present Blue Cross and Blue Shield policies provide hospitalization and professional fees for a relatively limited number of illnesses. Deliveries, simple abdominal operations—such as appendectomies or salpingectomies—, and tonsillectomies consume the major share of professional fees at present. Thus, the surgeon, the obstetrician, the otolaryngologist, and the radiologist—either directly or through the hospital—are receiving the lion's share of the fees. But most illness is cared for by the family doctor. It is now well accepted that approximately 85 per cent of all sickness can be cared for in the office or home with simple equipment. Most of such illnesses are not catastrophic and would not be covered by the insurance policy, and the delegates have decided that they should not be. The administrative problem of providing insurance against medical illness of catastrophic proportions is a difficult one. This problem, however, must be solved.

An analysis of the specialties listed by the physicians in this state reveals that roughly 61 per cent (1306 physicians) would not perform surgical operations. Thirty-six per cent (765) practice surgery, 3 per cent (49) radiology, and less than 1 per cent (10) anesthesiology. Under the plan proposed before the meeting of the House of Delegates, it had been predicted that 42 per cent of the professional fees would be paid for surgical operations and only 9 per cent for medical care; 8 per cent would have gone for laboratory fees and other miscellaneous items, 8 per cent for anesthesia, and the remaining 33 per cent for roentgen studies. To be fair, any insurance plan which guarantees *service* within an income group rather than *indemnity* against the total cost of illness must provide adequate compensation for the medical men.

In an effort to provide this compensation, the delegates accepted a formula which would allow the payment of larger fees for the first day of hospital care in cases of medical emergencies, such as coronary occlusion or diabetic coma. In these cases the amount of time required on the day of admission would be somewhat comparable to that of the surgical operation; much less time is required each day for the subsequent care of the illness. The proposed rate of $4.00 per day for non-operative care where no emergency exists indicates that the physician, himself, must assume the insurance risk on his time. This plan should reduce the administrative problem of the insurance companies; the physician guarantees to spend as much time as is necessary in the care of the patient, understanding that over a period of years the average amount of time spent on all cases will be fairly compensated.

Progress was made in defining the role of the insurance company or the medical service corporation—our Blue Cross, Blue Shield companies—in the plan.

The Society has voted on the type of policy it will approve. The insurance companies must now indicate their willingness to write such a policy and calculate the premium necessary to cover the estimated risks. The practicing physicians in the state will then be polled by the executive secretary of the State Society on their willingness to accept

the fee schedule proposed. The ballots returned to the executive secretary can be used by any insurance company.

The proposed policy would be easy to sell to industrial groups, but hard to sell to farm groups. In this predominantly rural state, however, it is highly important to bring the farmer into the scheme. The problem of selling the policy in rural areas has been successfully met in other states—California and Kansas, for instance. There farm groups, such as the Grange, have taken a leading part.

North Carolina as a whole has a long and proud record in the adoption of enlightened social steps. The doctors in the state have for a long time been making concerted efforts to develop a medical insurance plan which will meet the needs of our local situation. If thought, constructive criticism, and a spirit of compromise and cooperation are applied to this problem by patients, doctors, and insurance executives alike, the questions can be answered and a mutually satisfactory and beneficial plan devised.

* * * *

SCIENTIFIC ASPECTS OF SNAKE HANDLING

The May issue of the *Proceedings of the Royal Society of Medicine* contains an intriguing paper by Dr. William Sargant on the use of poisonous snakes in the religious services of some cults. Most readers of the NORTH CAROLINA MEDICAL JOURNAL will remember Dr. Sargant as the visiting professor of neuropsychiatry at Duke in 1947 and 1948. While there he had occasion to visit a chapel where snakes "were being used in an abreactive and cathartic form of service." He also obtained permission for the Duke Hospital photographer to take a number of pictures which graphically portray the facial expressions and bodily contortions of the participants. Many have rapt expressions; others are weeping; some are embracing each other; and one is lying in a cataleptic state.

Dr. Sargant compares the effects observed in this cult with the results of John Wesley's preaching more than 200 years ago, when those in his audience began to shout and groan, "people fainted and convulsed on the floor . . . Some listeners went mad; hours had to be spent with others to bring them out of an induced mental delirium." "But," continues the article, "many seemed to experience afterwards a somewhat similar type of mental outlook that we were seeing in the abreactive treatments of our war neuroses. They would feel that a great weight had been lifted from their minds. Conflicts had been resolved suddenly. They willingly believed ideas that they had scorned."

Dr. Sargant concludes that the "abreactions" achieved by the snake handlers, and centuries ago by John Wesley, may be closely related to the results obtained in treating war neuroses by Amytal and Pentothal—the so-called "narcosynthesis"—and that the effect is enhanced by the excitement induced by the pressure of the group. The more drastic insulin or electric shock therapy may be a further step in the process of changing thought patterns. "Old habits may be dislodged and new ones put in their place. The precipitating stimulus may be psychological, biochemical, or electrical."

Dr. Sargant does not recommend the substitution of snake handling for the more conservative manner of worship employed by most of our churches. He warns that the effects of such practices may be disastrous, since individuals may lose their reason altogether. He concludes, however, that "There do seem to be therapeutic values, often overlapping each other, in methods apparently as far apart as the snake pit, the gospel tent meeting, the electric shock machine and our modern 'psychodynamic' approaches to treatment. Further physiological and psychological research is necessary to elucidate these."

* * * *

THE BOWMAN GRAY ISSUE

In 1948 the editorial board of the NORTH CAROLINA MEDICAL JOURNAL voted to devote one special issue a year to papers contributed by one of the state's three medical schools. Last year Duke began the series with an excellent collection of articles, dedicated to the memory of Dr. Josiah C. Trent. This year the responsibility for the special issue fell on the staff of the Bowman Gray School of Medicine of Wake Forest College. Dr. George Harrell, director of the Department of Medicine, and a member of the editorial board, was in charge of collecting material for this month's issue.

The series of special medical school issues will be completed next spring, when the University of North Carolina Medical School prepares a collection of articles for the JOURNAL.

Clinicopathologic Conference

BOWMAN GRAY SCHOOL OF MEDICINE OF WAKE FOREST COLLEGE

Report of Case

First admission (November 21, 1948, to December 17, 1948)

This 63 year old white woman had always been in good health until approximately three to four months prior to admission, when she noticed postprandrial nausea and occasional vomiting unrelated to any particular foods. Her appetite remained good, but she complained of chronic constipation. Six weeks before admission, pain and swelling developed in her wrists and fingers, and to a lesser extent in various other joints. This persisted until the time of admission. Approximately two weeks prior to admission she noticed dark urine and acholic stools, and about one week prior to admission she observed that she was jaundiced. She had lost approximately 8 to 10 pounds in weight during her present illness, but had been on a reduction diet. She had had no pain, chills, fever, or food intolerance.

Physical examination: The temperature was 98.4 F., the pulse 100, respiration 16, blood pressure 130 systolic, 82 diastolic. The patient was a well developed, well nourished white female who was obviously jaundiced, but did not appear ill. The skin and sclerae were deeply icteric. The heart and lungs were clear. The liver edge, which could be palpated about 2 cm. below the costal margin on inspiration, was non-tender and smooth. No other organs or masses were felt. There was very slight swelling of the proximal phalangeal joints of the fingers.

Accessory clinical findings: The hemoglobin varied between 12 and 14.5 Gm. and the leukocyte count between 8,000 and 9,000, with a slight shift to the left in the Schilling hemogram. The sedimentation rate ranged from 8 to 22 mm. per hour, corrected. Microscopic examination of the urine revealed globules of bile pigment, and the urinalysis was positive for bile. At the time of admission the urine was negative for urobilinogen, but shortly before discharge the total quantitative urobilinogen was 4.32 Ehrlich units. The stool was pale and contained urobilin, but no occult blood. The blood Kahn test and the usual agglutination tests were negative.

The total serum proteins shortly after admission were 5.2 Gm.—albumin 2 Gm., globulin 3.2 Gm., albumin-globulin ratio 1.4. The fasting blood sugar was 93 mg. per 100 cc., serum amylase 54 Somogyi units. The icterus index, which was 40 units on admission, reached a high of 50 units, but had fallen to 30 units at the time of discharge. The serum bilirubin was 5.8 mg. per 100 cc. on admission, rose to 7.5 mg., and fell to 3 mg. before discharge. The alkaline phosphatase was 7.8 Bodansky units, uric acid 2.5 mg. per 100 cc.

The bleeding time, clotting time, and prothrombin time were normal, and a fragility test was negative. On admission an intravenous hippuric acid test revealed a total excretion of 0.45 Gm., and on December 6, 0.5 Gm. was excreted. Galactose tolerance tests were normal on two occasions. A bromsulfalein test done just prior to discharge showed 45 per cent retention at the end of forty-five minutes.

An electrocardiogram and a roentgenogram of the chest were normal. The roentgen study of the stomach and duodenum suggested the possibility of gastritis. X-rays of the hands were normal.

Course in the hospital: The patient was put on a high carbohydrate, high protein, low fat diet, which she tolerated very well. She ran a low-grade fever, occasionally as high as 101 F., and complained intermittently of aches and pains in her fingers and knees, relieved by paraffin baths. During the early part of her hospitalization the jaundice increased. During the first few days of December, however, her stools rapidly became brown and the jaundice began decreasing. Her liver remained the same size, and she was free of abdominal pain. When she was discharged on December 17, she was still icteric, but had improved considerably. She was instructed to continue the same diet, multivitamin capsules and phenobarbital, and to remain at relatively complete bed rest for one month.

Second admission (January 6, 1949, to February 1, 1949)

Following her discharge the patient obeyed instructions fairly well, except that she did a slight amount of work about the house. Her jaundice subsided, but never completely disappeared. She felt fairly well until five days before her second admission, when the icterus increased and she noted dark urine. Stools

were normal at this time. The pain in her fingers recurred, and anorexia developed.

Physical examination: The temperature was 98.8 F., pulse 88, respiration 20, blood pressure 110 systolic, 80 diastolic. Her general appearance had not changed appreciably. The skin was jaundiced, the hair had a yellowish tinge, and the sclerae and mucous membranes were quite icteric. Examination of the heart and lungs was negative. The liver was palpable four fingers' breadth below the costal margin; it had a rounded edge, and was non-tender. No other masses or organs were palpable. The ankles showed a trace of edema. The remainder of the physical examination was within normal limits.

Accessory clinical findings: The hemoglobin was 14.5 Gm.; the leukocyte count and differential were normal on admission. The sedimentation rate reached a maximum of 22 mm. per hour corrected. Urine examination was negative except for bile. Urobilinogen was present in a 1:20 dilution. The total serum proteins varied between 5.4 and 6.3 Gm.; the albumin remained around 2.5 Gm. and the globulin ranged between 2.8 and 3.8 Gm. The serum bilirubin was 7.5 mg. per 100 cc. on admission, but dropped to 2.7 mg. three days after admission, then gradually rose to 17.1 mg. shortly before she expired. The alkaline phosphatase was 5.3 Bodansky units. Serum cholesterol on admission was 160 mg. per 100 cc.; two weeks later it was 75. Serum amylase was 48 Somogyi units. The nonprotein nitrogen was 35 on admission, but gradually rose to 70 mg. per 100 cc., at which time the urea nitrogen was 31 mg. per 100 cc. The blood sugar ranged between 80 and 126 mg. per 100 cc.

The prothrombin time was slightly increased on one occasion. An intravenous hippuric acid test on January 18 revealed 0.14 Gm. benzoate excreted as hippuric acid.

Stool examinations were normal. Throat and sputum cultures revealed coagulase-positive hemolytic staphylococci and beta streptococci. Repeated blood cultures were negative. Heterophile agglutination tests on two occasions were positive in a 1:20 dilution. Cold agglutinins were present in a 1:4 dilution of serum.

Roentgenograms of the chest were negative on two occasions. A second roentgen study of the stomach and duodenum was normal; the barium enema examination revealed numerous diverticula around the left side of the colon. A flat plate of the abdomen showed numerous rounded calcific densities with radiolucent centers in both sides of the pelvis; these had the appearance of phleboliths. Hypertrophic changes were seen in the fourth and fifth lumbar vertebrae.

Course in the hospital: The patient was put on a high carbohydrate, high protein, low fat diet. She was given methionine, 1 Gm. three times daily; crude liver extract, 1 cc. intramuscularly every day; and a 5 per cent solution of dextrose, 1000 cc. daily. Because beta hemolytic streptococci were found in her throat on one occasion, she was given penicillin in oil, 1 cc. daily. Approximately three days after admission the icterus subsided slightly, but her temperature continued to range between 100 and 101.4 F. during the first five days. She complained frequently of soreness of the hands and knees, not relieved by salicylates or paraffin baths.

On January 14, 1949, a needle biopsy of the liver was performed without difficulty. The following day she had no tenderness over the site of the needle puncture, but did complain of a pleuritic type of pain in the right side of the chest on deep inspiration, and of cough which was slightly productive. A loud friction rub was heard over the right lower part of the chest; expansion was limited on that side, and medium and fine moist rales were heard at the lung bases, bilaterally. A roentgenogram of the chest suggested some spotty infiltration of the right lung. The administration of aqueous penicillin, 50,000 units every three hours, gave no apparent relief from her symptoms.

She seemed to be going downhill rapidly, and was eating very little. Another chest film was made at the bedside and suggested elevation of the right diaphragm. Because of the possibility that this mght be due to an amebic abscess, she was given emetine, 32 mg. twice a day for five days, although amebae had never been found in her stools. On this regimen her temperature fell to normal, but clinically she looked worse.

She was given protein hydrolysate orally to provide a calculated intake of 2000 calories per day, with 55 to 60 Gm. of protein. By January 26 it was necessary to give her tube feedings, which provided a daily intake of 3000 calories with 150 Gm. of protein. The following day she became irrational and had to be restrained. The leukocyte count

rose to 21,000. On January 28, 1949, she became comatose and was in marked respiratory distress. Her temperature was 100.2 F., pulse 120, blood pressure normal, respiration 46 per minute. Pitting edema of the ankles was present, and there was a questionable fluid wave in her abdomen.

On January 31 she began to have myoclonic spasms of her face, arms, and legs; these were partially relieved by glucose and calcium gluconate given intravenously. Her blood pressure fell to 90 systolic, 50 diastolic, and the leukocyte count rose to 47,000. There was a slight shift to the left in the Schilling hemogram, and toxic granulations were present. She expired quietly on February 1.

Clinical Discussion

DR. DAVID CAYER: This patient presented one of the more interesting and puzzling problems which confront the internist and practitioner of medicine—that of jaundice in a patient beyond middle age. The problem resolves itself chiefly into that of deciding whether the patient has an obstructive form of jaundice, which may be amenable to surgery, or a parenchymatous disorder, in which surgical intervention would be contraindicated. It is estimated that 80 per cent of jaundiced patients above the age of 40 will have an obstructive form of jaundice, and that 80 per cent of those below the age of 40 will have non-obstructive jaundice. However, we are seeing more and more patients beyond middle age who have jaundice which is not due to obstruction.

Many of our patient's symptoms are of little specific help. A small amount of *weight loss* can be attributed to anorexia and voluntary restriction of the diet. It may occur in patients having chronic cholecystitis and cholelithiasis as well as in those having hepatitis or cirrhosis. When weight loss is pronounced and more rapid, it is more likely to be due to a malignant lesion.

Absence of pain was once thought to be highly suggestive of carcinoma of the head of the pancreas. We now know, however, that at least 40 per cent of the patients with carcinoma of the head of the pancreas have pain as a major complaint during their illness. The same statement is true of patients with hepatitis or common duct stone, although each may occur without pain.

The occurrence of arthritis in a jaundiced patient is somewhat disturbing, since many observers have noted the disappearance of arthritis when jaundice develops.

Formerly a history of alcoholism or drugs, particularly cinchophen or gold therapy, was particularly sought for in jaundiced patients. We are now more sensitized to inquiring about previous treatment with blood or blood products. We frequently see patients who, some three to four months before the development of jaundice, have had a minor surgical procedure and have received a single transfusion during the course of their hospitalization. By the time homologous serum hepatitis develops they have either forgotten the transfusion or consider it too insignificant and unrelated to be told to the physician.

At the time of the patient's admission to this hospital, clinical and laboratory evidence suggesting elements of both obstruction and parenchymatous disease was present. The absence of urobilinogen in the urine and the elevated alkaline phosphatase suggest an obstructing lesion, but the later appearance of 4.32 Ehrlich units of urobilinogen in the urine, the decreased value of the intravenous hippuric acid test, the lowered serum proteins and albumin, and the negative roentgenograms are more suggestive of a parenchymatous, non-obstructive jaundice.

Surgical exploration of patients who do not have obstructive jaundice is a more frequent error than failure to operate on a patient who does have obstruction. As a rule, when the diagnosis is in doubt, a period of several weeks of watchful waiting is the wisest procedure. During this time supportive therapy may be instituted and the operative risk decreased. If the jaundice is due to one of the benign forms of liver cell involvement, it will usually begin to subside during this interval. If, however, obstruction should become complete and the intensity of the jaundice increases, little harm has been done. If the obstruction is incomplete, the patient may remain in fair condition indefinitely; and even complete obstruction of the common duct may be well tolerated for months.

On the usual therapeutic regimen this patient's jaundice decreased, the urinary urobilinogen increased, pigment returned in the stools, and definite clinical improvement was noted. These developments would seem to indicate that at the time medical management had been correct. She was therefore

discharged and allowed to return home, since the usual criteria for surgical intervention—namely, a history of stone or colic, the presence of a biliary fistula, or evidence of complete obstruction—were not present.

The patient neglected to follow the regimen of diet and complete rest outlined for her, and three weeks later she returned to the hospital, again showing marked icterus and enlargement of the liver. The increase noted in the size of the liver is helpful. The largest livers are found in patients with hepatitis or metastatic carcinoma. The liver function tests again showed evidence of extensive parenchymatous disease without complete obstruction.

In spite of a supportive regimen, including tube feedings, her course was progressively downhill.

Probably 90 per cent of the jaundiced patients seen in general hospital practice have either biliary tract obstruction due to carcinoma or stones, or diffuse parenchymatous disease and liver cell failure secondary to infection or cirrhosis.

In this patient *metastatic carcinoma* involving the liver is unlikely. There is no history suggesting a primary site; the liver was smooth rather than nodular; and there would be no reason for a remission such as this patient had.

Hodgkin's disease may occasionally produce progressive enlargement of the liver and may even have a clinical remission; but the jaundice usually does not subside, the fever is more hectic and remitting, and splenomegaly and enlarged nodes are usually found.

The history of prodromal symptoms lasting three or four months is somewhat against *carcinoma of the head of the pancreas*. Forty per cent of such patients have a history of pain, more pronounced weight loss, and pruritus. The onset of jaundice is apt to be more abrupt, and, once present, it is progressive and not remitting. The other clinical and laboratory signs of this disorder, such as a disturbance in carbohydrate metabolism, a palpable mass or palpable gallbladder, and roentgen evidence of widening of the duodenal loop, were also lacking.

The possibility of *common duct stone* must be considered seriously. While it is estimated that stones are present in some 75 per cent of patients who have biliary colic, as many as 40 per cent of patients with common duct stones may *not* have colic. None the less, careful questioning of such patients will usually elicit a previous history of digestive disturbances such as anorexia, epigastric discomfort, and intolerance to fats. These symptoms were not present in this patient. Chills and fever, which are also frequent symptoms, were lacking in this case. In patients with calcareous common duct obstruction, abnormal liver function tests are uncommon unless the obstruction has been persistent for some time. In this patient such findings were present at the time of her first admission. It would seem, therefore, in spite of the greater frequency of obstructive jaundice in this age group, that the weight of the evidence is in favor of a hepatocellular disturbance.

The presence of nausea, vomiting, low-grade fever, and a prodromal period of three to four months would be in keeping with a diagnosis of hepatitis. The description of the discoloration of the skin as yellow rather than a deep greenish hue is also more suggestive of a non-obstructive form of jaundice. The lowered blood proteins and early evidence of metabolic disturbance lend further confirmation to this diagnosis.

Terminally ascites developed. This rarely occurs in obstructive jaundice, but is a frequent finding in patients with cirrhosis or hepatitis. It is entirely possible that this patient had one severe episode of hepatitis with almost complete biliary obstruction, responded to hospitalization and treatment, and later had an exacerbation of her disease. Such a course might easily be confused with intermittent obstruction by stones.

Another possibility which should be mentioned and which has recently been emphasized in numerous papers is that of cholangiolitic or biliary cirrhosis following infectious hepatitis. In such cases the chief parenchymal involvement is about the small biliary radicles, bile thrombi are formed, and often the canaliculi are disrupted, so that products normally excreted in the bile appear in the blood. This condition might account for the elevated phosphatase noted on the first admission. In such patients, relatively good metabolic function may be present for some time.

The development of edema and ascites with a progressive decrease in liver func-

tion is indicative of a widespread hepatocellular disorder.

Dr. Cayer's Diagnosis

Subacute yellow atrophy.
? Cholangiolitic cirrhosis.

Pathologic Discussion

DR. THOMAS N. LIDE: In this case, the pathologist is confronted with the problem of differentiating hepatitis leading to hepatic cirrhosis from the classical Laennec's cirrhosis. I believe that in this patient the cirrhotic change was produced by an active inflammatory or destructive lesion, present in the liver for a considerable period of time.

At autopsy the patient had severe jaundice and was somewhat emaciated, but was generally well developed. The abdomen was distended; pitting edema was present in both ankles, and over the backs of the hands there was a patchy absence of skin pigment. The abdominal wall was covered by a layer of yellow fat 3 cm. in thickness. About 1500 cc. of dark amber fluid was present in the abdominal cavity.

There was no fluid in either pleural cavity, though fibrous adhesions were found at the apex and fibrinous adhesions laterally over the lower lobe on the right. Grossly the heart was within the limits of normal, except for the presence of several small lesions on the mitral valve. These lesions are described as fibrotic, cauliflower-like, and slightly dome shaped, measuring from 3 to 4 mm. in diameter and about 3 mm. in height. Numerous atheromatous plaques were present throughout the aorta, with calcification in the abdominal aorta. An area of fibrosis was found at the right pulmonary apex in the region of the adhesions, but no other definite lesions were found in the lungs.

The mediastinal and hilar lymph nodes were irregular in size, but were generally enlarged. The spleen, which weighed approximately twice as much as normal, was a dark reddish purple in color, and soft in consistency. The only lesion noted in the esophagus was a small, apparently superficial ulceration above the cardia. The stomach was filled with greenish fluid material. The bowel showed no lesions other than slight edema beneath the peritoneal surface along the mesenteric border. There were numerous diverticula in the transverse and descending colon. No changes were found in either adrenal. Both kidneys were moderately enlarged, with thickened capsules and a general mottled reddish brown cut surface. There was no sign of ureteral obstruction and the vessels were not prominent. No marked abnormality could be found in the bladder. The fundus of the uterus was absent as the result of previous surgery. The remaining ovarian tissue was cystic. The tubes were normal in size and appearance. Lymph nodes noted in the abdominal and thoracic cavities were generally enlarged, measuring from 1 to 2.5 cm. in diameter. These were present in the mesentery and in the pre-aortic region. Areas of calcification were found in nodes of the mesentery and around the neck of the gallbladder.

The gallbladder itself was filled with a thick, yellowish-orange bile without stones, and appeared slightly thickened throughout. No evidence of obstruction could be found at any point in the biliary tree. The liver was slightly decreased in size, weighing 1175 Gm., as compared to a normal of 1500 to 1700 Gm. The surface was pale, roughly granular, firm, and yellowish-brown in color. The nodules were generally small and measured from 2 to 4 mm. in diameter, though some were larger. There seemed to be an increase of fibrous tissue on palpation, but definite evidence of this could not be noted with the naked eye. This was not the deeply scarred, irregularly nodular liver more often seen after hepatitis.

Microscopic examination of the liver showed considerable evidence of disorganization. There was a marked increase in portal fibrous tissue, with a widespread and rather heavy infiltration of lymphocytes, plasma cells, and large mononuclear phagocytes. Relatively little active destruction of hepatic cells could be found, but there was evidence that destruction had been almost complete. The normal lobular structure was lost, and had been replaced by a roughly parallel arrangement of the cell cords. Not a single intact lobule could be found in all the sections of liver examined.

The loss of lobular structure, the increase in fibrous tissue, and the inflammatory reaction is entirely compatible with Laennec's cirrhosis. There is more inflammatory reaction than one usually finds in cirrhosis, but a differentiation between cirrhosis and posthepatic fibrosis cannot be made on this

basis alone. In posthepatic cirrhosis the regenerating foci of liver cells are usually larger and more variable in size than in this case, but this need not always be true[1].

The fibers of the myocardium were markedly swollen and irregular in structure, with some loss of cross striations and some evidence of fragmentation. These were evidences of toxic injury to the myocardium which are usually not found in cirrhosis alone. Throughout both lungs were focal areas of atelectasis, evidence of emphysema, and chronic interstitial pneumonia. Bronchitis was moderate in these particular areas. This reaction in the lungs is entirely compatible with the inflammatory lesion attributed to virus infection of the lung, and is not a terminal process. Fibrotic apical tuberculous lesions were found at the apex of the right lung, with calcification of a hilar lymph node.

The ulceration noted in the lower third of the esophagus may be attributed to one of three causes: (1) the tube feedings which were administered to the patient; (2) the spontaneous ulceration which occurs occasionally in the lower esophagus after death; and (3) the ulceration occurring as a part of the picture of diffuse and chronic hepatitis. Such lesions have been described by Lucké[2] in about half of his cases.

The atrophy of the gastric mucosa has been noted before in cases of liver disease, and has not been entirely explained. One theory which has been postulated is the loss of the intrinsic factor such as is found in patients with pernicious anemia, who also exhibit a marked gastric atrophy. The slight edema beneath the serosa of the bowel has been described to a more marked degree in Lucké's cases, often occurring in association with phlegmonous inflammation in the ileocecal region. The presence of ascites and enlargement of the spleen in this case can be taken only as evidence of portal obstruction.

The inflammatory reaction in the periadrenal adipose tissue is a feature which has been described in cases of hepatitis. I have never seen it in cases of cirrhosis to the extent exhibited here. The evidence of active inflammation in the lymph nodes of the thoracic and abdominal cavity has been pointed out. These nodes were large, some of them 2.5 cm. in diameter. The kidneys exhibited lesions which have been described many times before in association with jaundice. The tubules contained rather irregularly shaped casts with flattening or complete absence of the epithelium, and evidence of regeneration. At many points away from these casts there was marked cloudy swelling of the cells. This lesion is the so-called cholemic nephrosis, known to occur most frequently in cases of obstructive jaundice[3]. There was also moderate renal arteriosclerosis with minimal scarring, and one small retention cyst in the cortex.

The endocardial vegetation on the mitral valve has already been described. Unfortunately we have no sections from the joint capsules, but there was a clinical history of prolonged joint pains thought to represent rheumatoid arthritis. This arthritis was rather peculiar in that it became manifest and was more severe during the ascendency of the patient's jaundice. Whatever its relation to the hepatic disease, one finds evidence in the heart to support the diagnosis of rheumatoid arthritis, if one can accept the previous reports describing the visceral lesions in rheumatoid arthritis. In this case the endocardial vegetation was a peculiar, roughly concentric lesion with a central area of necrosis and a radiating arrangement in a few remaining nuclei in the capsule. This is the same structure which one finds in the joint capsules and beneath the skin in cases of active arthritis, and the same lesion which has been described previously as occurring in the heart, peritoneum, and pleura in rheumatoid arthritis[4]. It is not the lesion usually found in rheumatic fever, and is not the type of endocardial vegetation found in lupus erythematosus or in healed bacterial endocarditis.

In summary, we have a patient with active hepatic disease progressing over a period of approximately four months. When she first became jaundiced she also complained of joint pains. Her jaundice cleared to some degree after her admission to the hospital, but recurred following subsequent activity.

1. Lucké, B.: The Structure of the Liver after Recovery from Epidemic Hepatitis, Am. J. Path. 20:595-619 (May) 1944.

2. Lucké, B.: Pathology of Fatal Epidemic Hepatitis, Am. J. Path. 20:471-593 (May) 1944.

3. Thompson, L. L., Jr., Frazier, W. D., and Ravdin, I. S.: The Renal Lesion in Obstructive Jaundice, Am. J. M. Sc. 199:303-312 (March) 1940.

4. Gruenwald, P.: Visceral Lesions in a Case of Rheumatoid Arthritis, Arch. Path. 46:59-67 (July) 1948.

We may interpret the improvement as a subsidence of the acute hepatic necrosis with beginning recovery, and the recurrence of jaundice as a sign of recurrent injury with intrahepatic obstruction due to swelling, scarring, and regeneration of the injured hepatic lobules. The active inflammatory reaction has persisted in the liver, lungs, lymph nodes, retroperitoneal tissues, and other structures. It is for this reason that I am inclined to place this case outside the group of classical Laennec's cirrhosis and include it in the more uncommon group of postnecrotic cirrhosis.

Earlier, it was thought that this type of liver disease was particularly uncommon, but it has been recognized since Lucké's original report[2] that in an occasional case cirrhosis will develop following hepatitis[5]. The mortality in the 1942 epidemic of hepatitis was approximately 0.4 per cent[1]. Apparently complete regeneration and restoration to normal structure took place within about one month in those cases which could be studied following hepatitis. It is accepted, however, that complete recovery does not occur in all these cases, and that occasionally the patient will develop symptoms and signs of cirrhosis and die with hepatic insufficiency.

Pathologic Diagnoses

Probable chronic infectious hepatitis with cirrhosis of the liver

Severe icterus (hepatocellular)

Ascites and peripheral edema

Reactive and congestive splenomegaly

Cloudy swelling of the myocardium

Chronic interstitial pneumonia with fibrosis and focal atelectasis

Chronic lymphadenitis of hilar nodes

Arrested pulmonary tuberculosis with fibrosis and adhesions of right apex and calcification of hilar lymph nodes

Slight generalized arteriosclerosis

Renal arteriosclerosis with cortical retention cyst

Minimal cholemic nephrosis

Healed endocardial vegetation of the mitral valve (probable rheumatoid arthritis)

5. Popper, H. and Franklin, M.: Viral versus Toxic Hepatic Necrosis, Arch. Path. 46:368-376 (Oct.) 1948.

Committees and Organizations

COMMITTEE ON VENEREAL DISEASE

A NEW DAWN IN VENEREAL DISEASE CONTROL

H. H. HENRY, M.D.
CHARLOTTE

The control of venereal disease since the introduction of antibiotics as therapeutic agents has taken a great forward step during the decade between 1940 and 1950. A review of the literature verifies the opinion of federal, state and local public health agencies that syphilis, for instance, has probably reached its peak in this country, has broken, and even now is on the downward trend. Never before in the history of medicine have we been able to offer patients such relatively safe, abbreviated, and effective therapy.

Advances in Therapy

Case-holding is now a far less important factor in the control of venereal diseases. In contrast to former courses of antisyphilitic therapy, drawn out for months and years, we may now offer effective treatment with penicillin over a period of days, or weeks at the longest. Along with the amazingly shortened period required for completion of adequate therapy, medicine now offers drugs less toxic than former antisyphilitic agents, and drugs which may be administered with much less inconvenience to our clientele. For these reasons, the majority of patients with venereal disease, once the diagnosis has been made, will be adequately treated, and syphilis, at least, will be more readily arrested, if not definitely cured. Spread of infection is thus decreased, and the venereal disease case-load of acquired and congenital syphilis is lessened.

Regardless of the excellent present day results obtained in the treatment of syphilis, we must not be satisfied that we have the final answer to the therapy of this disease. Penicillin, as a therapeutic agent, is the best weapon now available to the medical profession, but we must admit that our impressive results are seen in early syphilis only, and furthermore that we are encountering infectious relapses in apparently adequately treated individuals. There is still a stubborn

group of patients who, despite early and adequate therapy, remain sero-resistant—the old bugaboo in syphilotherapy, the group of "Wassermann-fast" cases. Certainly we have satisfactorily proved to ourselves that penicillin therapy, regardless of amount or duration, is still not the answer to that very perplexing problem. There is no reason for subjecting such "Wassermann-fast" individuals to repeated courses of penicillin or other drugs. Nevertheless, in our minds there must remain the shadow of doubt. Have we arrested the syphilis? May it not be possible that there still exists a focus of infection that we have failed to uncover? The only possible approach to the solution of such cases lies in complete physical examinations and repeated laboratory surveys emphasizing the use of the quantitative serologic tests, the spinal fluid survey, and x-ray studies of the heart and great vessels. We should never close our files on such cases, but should keep them under close observation. This will not only assure the patient of the best possible medical care, but will prevent him from going from one physician to another who may fall into the trap of "treating the blood test" instead of the patient.

Modern day advances in the treatment of venereal disease and the rapid strides made in its control have made it difficult for us to find time to pause and evaluate fully the results of the treatment of syphilis in the latter years of the "dark age in syphilotherapy"—that is, the pre-penicillin years. In those years we had at our command a good therapeutic agent in the form of a satisfactory arsenical product. It is true that these products were more toxic and required a longer treatment schedule than penicillin, but they gave good therapeutic results. Yet we have seen these agents almost entirely discarded over a period of a few years, just as mercury was largely discarded when the arsenicals became available. With the dawn of penicillin, we sacrificed our knowledge and progress in regard to arsenotherapy. The unanswered question before us is, "After penicillin, what?" It is not illogical to believe that there may be a better antisyphilitic agent which will herald a new dawn in the history of venereal disease. While we are waiting for medical science to open this new door, it is our job to concentrate our efforts in other directions in an attempt to eradicate from the face of the earth this time respected plague—venereal disease.

Education and Contact Investigation

Treatment, regardless of the agent, is not the answer. There is always the problem of finding the source of infection. We must always be ready to face the unquestionable fact that, for any and every case of syphilis coming to our attention, there exists somewhere on the globe at least one other case of syphilis, previously diagnosed or not, previously treated or not. That fact applies to either acquired or congenital syphilis. In the case of the latter, where is the mother? Has she ever come to diagnosis and therapy? New cases of acquired syphilis mean that sometime, somewhere, regardless of means of transmission or mode of infection, that particular patient was in contact with an infectious case of syphilis.

There has raged for many years now the argument as to whether venereal disease education or contact investigation is more effective. Both methods have their merits, and neither can be totally sacrificed in favor of the other. They should both still be regarded as the important methods of control Let us not neglect the field of education. Education of the medical profession as a whole will result in our becoming venereal disease conscious, and with such an attitude we are certain to find more cases. Cases will be uncovered earlier, and therapy will be more effective, improving our cure rate of infection. Education of the laity helps to make patients aware of the possibility of infection, teaches them to recognize the symptoms, and encourages them to seek routine regular medical examinations, including blood tests. To a great extent, however, educational efforts seem to fall on deafened ears. We must understand the problems of the uneducated, who cannot read the materials offered them or who fail to understand what we are trying to tell them, regardless of the medium of presentation. Case finding through contact investigation offers a more direct approach to our problem.

Once a diagnosis of syphilis has been made in a new case, the pattern of venereal disease control, the epidemiology of syphilis begins. The foremost question to be answered is,

"Where is the source of infection?" The more intelligent and cooperative the individual patient, the less difficult it will be to obtain such information. When the patient is not cooperative, we must attempt to make him understand our interest in such matters. We frequently obtain answers such as "She's a nice girl and I can't bring her into this," or "She is a married woman." We must overrule these objections and explain that, to control venereal disease, the chain of spread of the infection must be broken, and the unknown case or cases brought to diagnosis and therapy.

Obtaining the probable source of infection is only half of the problem. It is equally important to learn who has been exposed to the disease by the patient now in our hands. If we are going to use the argument of fair play, it carries more weight here than in tracking down the origin of infection. How often we hear the beseeching plea of the married man: "Please don't tell my wife." No, you and I should not tell the wife. As I see it, it is solely the responsibility of the infected husband, if he thinks anything of his spouse, to inform her of his infection and of the probability that she has been exposed to disease. Of course, to ease his burden, we should offer assistance in breaking the shocking news to the unsuspecting mate. It is unquestionably our responsibility as physicians to make certain that the innocent partner is afforded an immediate opportunity for early diagnosis and proper treatment.

Legal Aids to the Control of Venereal Disease

Fortunately, we have the laws and ordinances necessary to assist us in the control of venereal disease. We can legally require the examination of those individuals suspected of having infections; we can legally require treatment of the infected cases; and we can go as far as putting patients under quarantine until they are rendered non-infectious. Unfortunately, such measures are needed to control those individuals whom we cannot approach on an intellectual plane, and from time to time we have all encountered such patients.

Our relatively new laws requiring premarital and prenatal blood tests indicate that the importance of venereal disease is fully recognized. However, it is most unfortunate that such a valuable tool in venereal disease control is used only to comply with the law. A negative blood test obtained at the time of the first prenatal visit is of much value, but it cannot rule out the possibility that the baby will have congenital syphilis, since the mother may contract syphilis later in her pregnancy. It is my belief that, without exception, the blood test should be repeated as the expectant mother enters the third trimester of her pregnancy.

The Physician's Responsibility

The control of venereal disease is altogether the responsibility of the medical profession and our allied co-workers in that field. We cannot afford to sit back waiting for the infected hordes to present themselves for diagnosis and treatment. If our educational attempts bore full fruit, such a course would be justified, but unfortunately this is not the case. It is our responsibility as physicians to maintain a high index of suspicion and to be always on the alert for possible infection. Once we do encounter a patient with venereal disease, it becomes our responsibility to establish as accurate a diagnosis as possible and to render the most effective form of therapy at our command. By so doing we have momentarily eradicated or at least arrested one case of infection, but we have not fulfilled our responsibility unless we seek out the contacts—both the possible sources of infection and the innocent victims of our patient's disease.

Public health services have implored that cases of venereal disease be reported, regardless of whether the diagnosis is made in a clinic, a hospital, or in practice. Only if each of us conscientiously reports every case can we ever hope to establish the true incidence of syphilis. Every convenience has been afforded us for reporting our cases; the identity of the patient can be safely concealed, since reporting in code is possible. The eradication of venereal disease cannot be accomplished by any one individual or any delegated group of individuals, but requires the full time effort of the entire medical profession. Only when each one of us shoulders his full responsibility in regard to the task at hand can we hope to accomplish our great goal—the eradication of a needless and inexcusable group of diseases from the realm of medicine.

CORRESPONDENCE

WHEN IS A MAN DEAD?

To the editor:

The trial of Dr. Hermann N. Sander has focused public interest upon the diagnosis of death. In view of this interest it would seem appropriate to call attention to the disorganized and relatively difficult access to such information.

Death to be treated as such should be determined with *certainty*. In order to save life, "apparent" death should be more generally recognized. The signs of death should be *common knowledge*.

Precise and condensed information should be in the hands of every Medical Examiner and Coroner. It should be easily available in reference libraries and educational institutions of all kinds. In certain sections of the country, this is particularly important in order to reduce the danger of premature embalming or burial.

In the interrogation of Dr. Ralph E. Miller two important signs of death were overlooked . . . (a) absence of arterial bleeding, (b) blood color change in the presence of oxygen. These signs are fully described in "The Art of Resuscitation," Reinhold Publishing Company, New York City, in its Chapter 31, "The Signs of Death." It would seem wise to take advantage of the present interest to place on file information usually so remote and having so little popular appeal.

Paluel J. Flagg, M.D.
Society for the Prevention of
Asphyxial Death, Inc.
205 East 78th St.
New York City

Aureomycin Prices Reduced

A down-the-line price reduction of 20 per cent on all aureomycin products, effective February 1, was announced by Lederle Laboratories Division, American Cyanamid Company, producer of the famous golden antibiotic.

Products for human medication affected by this cut include Aureomycin Capsules (250 mg. and 50 mg.), Aureomycin Ointment, Aureomycin Troches, Aureomycin Ophthalmic, Aureomycin Intravenous (for injection in emergencies) and Aureomycin Spersoids. The latter is a chocolate-flavored powder, used for treating diseases in children.

BULLETIN BOARD

PRESIDENT'S MESSAGE

THE ANNUAL MEETING

A growing membership and the social and professional complexity of our day have produced a vast increase in the amount of business which must be transacted at the annual meetings of the Medical Society of the State of North Carolina. It would seem desirable to condense and consolidate this business as much as possible without the sacrifice of efficiency or adequate deliberation.

Last year the annual reports of committees were mimeographed and mailed to all delegates far enough in advance to allow them to be read and studied. The same procedure will be followed in 1950. Reports which call for no comment from the delegates, which have been studied by the Executive Committee, and which are unamended by their authors may reasonably be accepted without formal reading.

Committee chairmen are requested to forward their annual reports without further delay. In anticipation of the meeting all delegates are urged to read these reports in advance and be in a position to act upon them with facility.

The year 1950 brings the election of the Board of Medical Examiners. Heretofore this often has been a long and laborious procedure. The constitution provides that the Board of Medical Examiners be elected at a general session on the second day of the annual meeting. Thus, nominations are from the floor, balloting is by all members, and a majority of the votes cast on any one ballot is necessary for election.

The Executive Committee has authorized that the mechanics of the election be as follows:

1. Floor standards will be in place indicating gathering areas (by number) for the various districts.
2. Members will vote only at the polling places for their own districts.
3. Nominations will be received from the floor and the names written on a large blackboard.
4. Each councilor will appoint three tellers for his district. These will collect

and tabulate the votes from that district.

5. The votes from the various districts will then be placed on a central tally sheet. This will allow a rapid computation of the total votes cast and a quick determination of the number received by each candidate.
6. The names of those receiving a majority on the first ballot will be removed from the board. Following ballots will be prepared for those whose names remain until seven have been elected.

It is hoped that this procedure will allow the election to be conducted in minutes rather than hours. Certainly it will comply with constitutional requirements, with accepted parliamentary procedure, and with good taste.

G. W. MURPHY, M.D.

PRELIMINARY PROGRAM

of the

NINETY-SIXTH ANNUAL SESSION

The Medical Society of the State of North Carolina

May 1, 2, and 3, 1950

PINEHURST, NORTH CAROLINA

Headquarters—Hotel Carolina

RESUME OF PROGRAM

SUNDAY, APRIL 30, 1950

3:00 P.M.—Executive Committee Meeting (Small Card Room)

MONDAY, MAY 1, 1950

9:00 A.M.—Registration Booth Opens (Front Lobby)
9:00 A.M.—Exhibits Open (West Porches)
2:00 P.M.—House of Delegates of Medical Society (Ballroom)
5:30 P.M.—Intermission, House of Delegates of Medical Society
6:00 P.M.—Medical College of Virginia Alumni Dinner (Crystal Room)
6:00 P.M.—Exhibits Close
8:00 P.M.—House of Delegates Reconvenes (Ballroom)
8:00 P.M.—Executive Board Meeting, Auxiliary to Medical Society (Small Card Room)
8:30 P.M.—Bingo Party, Auxiliary to Medical Society (Pine Room)

TUESDAY, MAY 2, 1950

7:30 A.M.—Officers' Breakfast (Crystal Room)
7:30 A.M.—Breakfast, Medical Women's Association (Stag Room)
8:00 A.M.—Registration Booth Opens (Front Lobby)
8:45 A.M.—Exhibits Open (West Porches)
9:00 A.M.—First General Session of Medical Society (Ballroom)
9:00 A.M.—Executive Board Meeting, Auxiliary to Medical Society (Pine Room)
10:00 A.M.—Annual Meeting, Auxiliary to Medical Society (Pine Room)
11:00 A.M.—Medical Advisory Committee to N. C. Commission for the Blind (Dutch Room)
1:00 P.M.—Luncheon, Auxiliary to Medical Society (Pinehurst Country Club)
—Duke University Medical Alumni Luncheon (The Manor)
—University of N. C. Medical Alumni Luncheon (Crystal Room)
2:30 P.M.—Section Meetings, Medical Society:
Section on Surgery (Ballroom)
Section on Practice of Medicine (Large Card Room)
Section on Gynecology and Obstetrics (Pine Room)
Section on Neurology and Psychiatry (Dutch Room)
Section on Pathology (Theater)
7:00 P.M.—President's Dinner (Main Dining Room)

WEDNESDAY, MAY 3, 1950

8:00 A.M.—Registration Booth Opens
9:00 A.M.—Second General Session of Medical Society (Ballroom)
10:00 A.M.—Bridge and Canasta Party, Auxiliary to Medical Society (Large Card Room)
10:30 A.M.—Election Seven Members North Carolina Board of Medical Examiners
12:00 Noon—Conjoint Session (Ballroom)
12:25 P.M.—Awarding of prizes (Ballroom)
12:35 P.M.—Presentation of High School Essay Contest Winner
1:00 P.M.—University of Pennsylvania Medical Alumni Luncheon (Crystal Room)
—Jefferson Medical College Alumni Luncheon (East End Dining Room)
—Tulane University Medical Alumni Luncheon (Stag Room)
2:30 P.M.—Second Meeting of House of Delegates (Small Card Room)
2:30 P.M.—Section Meetings, Medical Society:
Section on General Practice of Medicine and Surgery (Ballroom)
Section on Pediatrics (Large Card Room)
Section on Ophthalmology and Otolaryngology (Pine Room)
Section on Radiology (Theater)
Section on Public Health and Education (Community Church)
5:00 P.M.—Third General Session (Ballroom)

PROGRAM OF THE MEDICAL SOCIETY

OFFICERS BREAKFAST

TUESDAY, MAY 2, 7:30 A.M.

(Crystal Room)

8:00 A.M.—The Twelve Point Program of the American Medical Association—George F. Lull, M.D., Secretary and General Manager, American Medical Association, Chicago

8:20 A.M.—The Legislative Situation Nationally—Frank E. Wilson, M.D., Deputy Director, American Medical Association Washington Office, Washington, D. C.

8:30 A.M.—County Society Educational Responsibilities to the Public—Donald B. Koonce, M.D., Chairman, Public Relations Committee, Wilmington

8:40 A.M.—Progress in Public Relations at the State Society Level—Mr. LeRoy H. Cox, Director Public Relations, Medical Society of the State of North Carolina, Raleigh

8:50 A.M.—Problems Related to Processing Medical Dues—Millard D. Hill, M.D., Secretary-Treasurer, Medical Society of the State of North Carolina, Raleigh

9:00 A.M.—Adjournment

MEDICAL WOMEN'S ASSOCIATION BREAKFAST

TUESDAY, MAY 2, 7:30 A.M.

(Stag Room)

FIRST GENERAL SESSION

(Ballroom)

TUESDAY, MAY 2, 1950

9:00 A.M.—Call to Order, Millard D. Hill, M.D., Chairman, Committee on Arrangements.
Invocation, Rev. R. L. Prince, Pinehurst
Announcements
Presentation of President, G. Westbrook Murphy, M.D.

9:10 A.M.—Report of Committee on Award of Moore County Medal:
Rowland T. Bellows, M.D., Chairman, Charlotte
William S. Dosher, M.D., Wilmington
Ralph S. Morgan, M.D., Sylva

9:20 A.M.—Report of Obituary Committee:
Robert M. McMillan, M.D., Chairman, Southern Pines
Zachary F. Long, M.D., Rockingham
Heyward C. Thompson, M.D., Shelby

9:30 A.M.—The Surgical Treatment of Pain—W. R. Pitts, M.D., Charlotte (From Section on Surgery)

9:50 A.M.—Treatment of Fibrositis of Neck and Shoulder with Microthermy (Radar) —George D. Wilson, M.D., Asheville (From Section on Practice of Medicine)

10:10 A.M.—Operative Aspects of Female Sterility —Violet H. Turner, M.D., and C. B. Davis, M.D., Durham (From Section on Obstetrics and Gynecology)

10:30 A.M.—Address: George F. Lull, M.D., Secretary and General Manager, American Medical Association, Chicago

11:10 A.M.—Medical Education in Psychiatry; A Proposal to Raise the Standards of Patient Care and Psychiatric Treatment in the State of North Carolina —Leslie B. Hohman, M.D., Durham (From Section on Neurology and Psychiatry)

11:50 A.M.—The Corporate Practice of Medicine in the Relationship of Hospitals and the Profession—Elmer Hess, M.D., Erie, Pa.

12:50 P.M.—Adjournment.

SECTION ON SURGERY

(Ballroom)

Tuesday, May 2, 2:30 P.M.

W. Paul Sanger, M.D., Chairman, Charlotte

Postoperative Anuria
Donald B. Koonce, M.D., Wilmington

Regional Ileitis
Gordon Sinclair, M.D., and Alfred Hamilton, M.D., Raleigh

Surgical Experience and Management of Portal Hypertension
Addison Brenizer, Jr., M.D., Charlotte

Diagnosis and Management of Rectal Polyps
Isaac E. Harris, Jr., M.D., and James D. Littlefield, M.D., Durham

Treatment of Nucleus Pulposus
Eben Alexander, M.D., Winston-Salem

Advanced Lymphopathy
H. Max Schiebel, M.D., Durham

Surgical Treatment of Pain
William R. Pitts, M.D., Charlotte
(Before First General Session, Tuesday, May 2)

SECTION ON PRACTICE OF MEDICINE

(Large Card Room)

Tuesday, May 2, 2:30 P.M.

David Cayer, M.D., Chairman, Winston-Salem

The Action of Cardiac Glucosides
J. Gilmer Mebane, M.D., Rutherfordton

Recent Advances in Allergy
Wayne Rundles, M.D., Durham

Recent Advances in Antibiotic Therapy
Karl Shepard, M.D., High Point

Therapeutic Implications of ACTH
Lytt I. Gardner, M.D., Chapel Hill

Treatment of Fibrositis of Neck and Shoulder with Microthermy (Radar)
George D. Wilson, M.D., Asheville
(Before First General Session, Tuesday, May 2.)

SECTION ON OBSTETRICS AND GYNECOLOGY

(Pine Room)

Tuesday, May 2, 2:30 P.M.

F. Bayard Carter, M.D., Chairman, Durham

2:30-3:30 Pelvic Anatomy. Motion Picture in Color. John Everett, Ph.D., Durham

3:30-3:50 The Problem of Infectious Diseases in Early Pregnancy as a Cause of Congenital Malformations—Jesse B. Caldwell, M.D., and Donald F. Whitener, M.D., Winston-Salem. Discussants: Arthur London, M.D., Durham, and Richard Dunn, M.D., Greensboro

4:00-4:20 The Methods and Results in State-County Cancer Centers — Mildred Schram, Ph.D., and G. M Cooper, M.D., Raleigh. Discussants: James F. Marshall, M.D., Winston-Salem, and James F. Robertson, M.D., Wilmington

4:30-4:50 Obstetric Anesthesia with Rectal Sodium Pentothal — Ernest W. Furgurson, M.D., Plymouth. Discussant: John Cotten Tayloe, M.D., Washington.
Operative Aspects of Female Sterility—Violet H. Turner, M.D., and C. B. Davis, M.D., Durham. (Before First General Session, Tuesday, May 2)

SECTION ON NEUROLOGY AND PSYCHIATRY

(Dutch Room)

Tuesday, May 2, 2:30 P.M.

R. Burke Suitt, M.D., Chairman, Durham

Medical Education in Psychiatry; A Proposal to Raise the Standards of Patient Care and Psychiatric Treatment in the State of North Carolina
Leslie B. Hohman, M.D., Durham
(Before the First General Session, Tuesday, May 2, 1950)

Levels of Medical Teaching
Richard S. Lyman, M.D., Durham

Teaching of Clinical Neurology
E. Charles Kunkle, M.D., Durham

The Role of the Mental Hospital in the Teaching of Psychiatry
Edward M. Pleasants, M.D., Raleigh, and Donald Martin, M.D., Durham

Neuropathology—A Problem in Teaching
George Margolis, M.D.

Integrating the Teaching of Neurosurgery with Allied Specialties
Barnes Woodhall, M.D., Durham

Teaching Child Psychiatry and Child Neurology
Grant Taylor, M.D., and Vernon Kinross-Wright, M.D.

Recent Developments in the Teaching of Comprehensive Medicine
Maurice H. Greenhill, M.D., William H. Fitzpatrick, M.D., and Klaus W. Berblinger, M.D., Durham

SECTION ON PATHOLOGY
(Theater)
Tuesday, May 2, 2:30 P.M.

Thomas N. Lide, M.D., Chairman, Winston-Salem

Laboratory Studies on Leptospirosis
Parker R. Beamer, Ph.D., M.D., Winston-Salem

"Beryllium Granulomatosis"—Presentation of a Case
H. Lee Large, Jr., M.D., Charlotte

Pulmonary Adenomatosis and Alveolar Cell Carcinoma of the Lung
Paul Kimmelstiel, M.D., Charlotte
(No paper to be presented before General Session)

PRESIDENT'S DINNER
(Main Dining Room)
(Dress Optional)
Tuesday, May 2, 1950

7:00 P.M.—Banquet
Toastmaster—L. Nelson Bell, M.D., Asheville
Invocation—The Most Reverend Vincent S. Waters, Bishop of the Catholic Diocese, Raleigh
7:40 P.M.—Presentation of Guests
7:50 P.M.—Address
G. Westbrook Murphy, M.D., President, Medical Society of the State of North Carolina, Asheville
8:10 P.M.—Presentation of President's Jewel
Ben F. Royal, M.D., Morehead City
8:15 P.M.—Introduction of Guest Speaker
L. Nelson Bell, M.D., Asheville
Address: The British Health Scheme
Mr. John McPherrin, Editor, **American Druggist**, New York City
9:15 P.M.—Adjournment
10:00 P.M. to 2:00 A.M.—President's Ball
(Ballroom)

SECOND GENERAL SESSION
(Ballroom)
Wednesday, May 3, 1950

9:00 A.M.—Multi-Phasic Screening
Cecil G. Shep, M.D., Chapel Hill
9:20 A.M.—Gastrointestinal and Food Allergy; Diagnosis and Treatment
J. Warrick Thomas, M.D., Richmond, Va.
(From Section on Practice of Medicine and Surgery)
9:40 A.M.—The North Carolina Premature Program
J. Robert Murphy, M.D., Raleigh
(From Section on Pediatrics)
10:00 A.M.—Recent Trends in the Treatment of Carcinoma of the Larynx
G. B. Ferguson, M.D., Durham
(From Section on Ophthalmology and Otolaryngology)
10:20 A.M.—Address:
George F. Lull, M.D., Secretary and General Manager, American Medical Association, Chicago
10:50 A.M.—Election Members of North Carolina Board of Medical Examiners (7)
11:10 A.M.—The Role of the Physician in the Diagnosis of Breast Carcinoma
Eugene Pendergrass, M.D., Professor of Radiology, University of Pennsylvania, Philadelphia
(From Section on Radiology)

CONJOINT SESSION
(Ballroom)
Wednesday, May 3, 12:00 Noon

G. Grady Dixon, M.D., Ayden, President of the State Board of Health, will preside over this meeting of the Medical Society of the State of North Carolina and the State Board of Health

SECTION ON GENERAL PRACTICE OF MEDICINE AND SURGERY
(Ballroom)
Wednesday, May 3, 2:30 P.M.

William T. Ward, M.D., Chairman, Raleigh

The Diagnosis of Cervical Lesions
James F. Donnelly, M.D., Winston-Salem
Discussants: Robert N. Creadick, M.D., Durham, and A. R. Cross, M.D., High Point

Hemophilus Influenzae Meningitis in Adults
William T. Raby, M.D., Charlotte
Discussant: George T. Harrell, M.D., Winston-Salem

Better Office Practice
Wiley S. Cozart, M.D., Fuquay Springs
Discussant: Oscar S. Goodwin, M.D., Apex

Some Recent Advances in Drug Therapy
James P. Hendrix, M.D., Durham

Bulbar Poliomyelitis
Robert B. Lawson, M.D., Winston-Salem

Laissez-Faire to Regimentation and Back Again: The Pediatric Pendulum
Frank Howard Richardson, M.D., Black Mountain

Subluxation of the Head of the Radius with Cinematographic Portrayal
Dan P. Boyette, M.D., Ahoskie

The North Carolina Premature Program
Robert J. Murphy, M.D., Raleigh
(Before Second General Session, Wednesday, May 3)

SECTION ON OPHTHALMOLOGY AND OTOLARYNGOLOGY
(Pine Room)
Wednesday, May 3, 2:30 P.M.

Henry H. Briggs, M.D., Chairman, Asheville

Operative Procedure for Evisceration of the Eye
W. P. McKay, M.D., Fayetteville

Anesthesia in Endoscopy
M. R. Himalstein, M.D.

Endoscopy in the Diagnosis of Bronchiogenic Carcinoma
J. R. Wright, M.D.

The Use of the Castroviejo Erisiphake in Intracapsular Cataract Extractions
Roy Allen Stewart, M.D., Newton

Hearing Loss
Ralph Arnold, M.D., Durham

Observations on Orbital Implants
J. L. Etherington, M.D., Goldsboro

Recent Trends in Treatment of Carcinoma of the Larynx
G. B. Ferguson, M.D., Durham
(Before Second General Session, Wednesday, May 3)

SECTION ON RADIOLOGY
(Theater)

Wednesday, May 3, 2:30 P.M.

Allan D. Tuggle, M.D., Chairman, Charlotte

I. Problems in Medical Practice (Radiology)
J. P. Rousseau, M.D., Winston-Salem

II. Panel Discussion on Certain Bone Diseases with Presentation of Cases and Questions from the Floor
1. Development of Bone
W. C. George, Ph.D., Chapel Hill
2. Radiologic Appearance of Normal Bone
James T. Marr, M.D., Winston-Salem
3. Eosinophilic Granuloma
John C. Oleen, M.D., Durham
4. Infantile Cortical Hyperostoses (Caffey)
Hill Grimmett, M.D., Kannapolis
5. Osteoid Osteoma
W. W. Vaughan, M.D., Durham
6. Osteitis Deformans (Paget's disease)
Leslie M. Morris, M.D., Gastonia
7. Fibrous Dysplasia
Thomas G. Thurston, M.D., Salisbury

Discussants:
Orthopedics—Lenox D. Baker, M.D., Durham
Pathology—Lee Large, M.D., Charlotte
Embryology and Physiology—W. C. George, Ph.D., Chapel Hill

III. The Role of the Physician in the Diagnosis of Breast Carcinoma
Eugene Pendergrass, M.D., Professor of Radiology, University of Pennsylvania, Philadelphia

(Before the Second General Session, Wednesday, May 3)

SECTION ON PUBLIC HEALTH AND EDUCATION
(Community Church)

Wednesday, May 3, 2:30 P.M.

Samuel B. McPheeters, M.D., Chairman, Goldsboro

Advances in the Diagnosis and Treatment of Convulsive Disorders
R. L. Masland, M.D., and Marvin J. Rosenblum, M.D., Winston-Salem

The Federal Mental Hygiene Program
C. G. Southard, M.D.

The State Mental Hygiene Program
C. C. Applewhite, M.D., Raleigh

The Application of Streptomycin in and out of the Sanatorium
H. S. Willis, M.D., McCain

Multi-Phasic Screening
Cecil G. Shep, M.D., Chapel Hill

(Before the Second General Session Wednesday, May 3)

THIRD GENERAL SESSION
(Ballroom)

Wednesday, May 3, 1950

5:00 P.M.—Report of House of Delegates

5:15 P.M.—Unfinished business

5:20 P.M.—New business

5:30 P.M.—Installation of president, president-elect, and vice-presidents

5:40 P.M.—Remarks by president and president-elect

5:50 P.M.—Adjournment **sine die**

NEWS NOTES FROM THE UNIVERSITY OF NORTH CAROLINA

Postgraduate medical courses sponsored by the University School of Medicine and the Extension Division have been arranged at Salisbury, with the Rowan County Medical Society as co-sponsor, and at North Wilkesboro and Elkin, with the Wilkes-Alleghany Counties Medical Society and the Surry-Yadkin Counties Medical Society as co-sponsors. The programs are as follows:

Salisbury

March 29—Neurosurgical Problems in General Practice—Diagnosis and Treatment
—Dr. Gilbert Horrax, The Lahey Clinic, Boston

April 5 —4 p.m.—Treatment of Bacterial Infections with Newer Antibiotics
8 p.m.—Treatment of Rickettsial and Viral Diseases with Antibiotics
—Dr. Theodore E. Woodward, University of Maryland School of Medicine, Baltimore

April 12—Recent Advances in Anesthesiology
—Dr. Robert D. Dripps, University of Pennsylvania Hospital, Philadelphia

April 19—4 p.m.—The Causes of Amenorrhea
8 p.m.—The Contributions of ACTH and Cortisone to the Understanding of Diseases of the Adrenal Cortex
—Dr. Frederic Bartter, Massachusetts General Hospital, Boston

April 26—Recent Advances in Management of Cardiovascular Disease
—Dr. Carleton B. Chapman, University of Minnesota, Minneapolis

May 10 —Medical Diseases of the Chest
—Dr. James B. Amberson, Columbia University College of Physicians and Surgeons, New York City

North Wilkesboro-Elkin

March 28 (North Wilkesboro)—Neurosurgical Problems in General Practice—Diagnosis and Treatment
—Dr. Gilbert Horrax, The Lahey Clinic, Boston

April 4 (Elkin)—4 p.m.—Treatment of Bacterial Infections with Newer Antibiotics
8 p.m.—Treatment of Rickettsial and Viral Diseases with Antibiotics
—Dr. Theodore E. Woodward, University of Maryland School of Medicine, Baltimore

April 11 (North Wilkesboro)—Pediatrics (Exact subject to be announced)
—Dr. Philip A. Mulherin, University of Georgia School of Medicine, Augusta

April 18 (Elkin) 4 p.m.—The Causes of Amenorrhea
8 p.m.—The Contributions of ACTH and Cortisone to the Understanding of Diseases of the Adrenal Cortex
—Dr. Frederic Bartter, Massachusetts General Hospital, Boston

April 25 (North Wilkesboro) 4 p.m.—The Management of Common Obstetric Cases
8 p.m.—The Bleeding Gynecologic Patient Presents Herself
—Dr. Edward A. Schumann, Philadelphia

May 9 (Elkin)—Medical Diseases of the Chest
—Dr. James B. Amberson, Columbia University College of Physicians and Surgeons, New York City

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A contract with the Atomic Energy Commission has been closed by the Department of Biological Chemistry and Nutrition with Dr. James C. Andrews

as project leader and Mr. M. K. Berkut as associate project leader. This project is for the support of research on tracer studies and irradiation in dental metabolism.

* * * *

Dr. Granvil C. Kyker, associate professor of biological chemistry, has resigned to become head of the Department of Biological Chemistry of the School of Medicine at the University of Puerto Rico. Dr. Kyker assumes his new position in July. The organization of the school of medicine in Puerto Rico has been in progress during the past year, and it will begin the teaching of a class of fifty first-year students in the fall of 1950.

* * * *

The National Cancer Institute has approved a grant of $200,000 to be used for the construction of a cancer research laboratory, which will be a part of the building program now under way at the Medical School. Staff members engaged in cancer research include Drs. Charles W. Hooker, C. D. Van Cleave, and C. T. Kaylor of the Department of Anatomy and Dr. Kenneth M. Brinkhous of the Department of Pathology.

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Dr. John H. Ferguson of the Department of Physiology was elected secretary of the new Southeastern Branch of the Society for Experimental Biology and Medicine (representing North and South Carolina, Southern Virginia, and Oak Ridge, Tennessee).

* * * *

At the recent meeting of the Southeastern Branch of the Society for Experimental Biology and Medicine held at Duke University on January 27 the following staff members presented papers:

K. M. Brinkhous and John B. Graham, Pathology —"A Study of the Occurrence of Canine Hemophilia in Females"

Lytt I. Gardner, Biological Chemistry—"Observation on Experimental Potassium Deficiency"

Charles W. Hooker, Anatomy—"Inactivation of Progesterone by Rabbits Plasma"

Jessica H. Lewis and John H. Ferguson, Physiology—"Fibrinolysokinases of Different Species"

* * * *

Drs. Jessica H. Lewis and John H. Ferguson will present a paper on "Congenital Idiopathic Hypoprothrombinemia" at the meeting of the Southern Society for Clinical Research in New Orleans on March 17.

News Notes from the Duke University School of Medicine

Dr. Donald S. Martin, a member of the Duke University Medical School and Duke Hospital staffs for eighteen years, has resigned to become dean and professor of microbiology at the newly established University of Puerto Rico School of Medicine. Dr. Martin is professor of preventive medicine and public health, associate professor of bacteriology, and epidemiologist to Duke Hospital. His resignation becomes effective March 31.

The new medical school in Puerto Rico will open its doors for the first time next fall. A first-year class of fifty will be admitted. Dr. Martin will leave Durham about March 26 and assume his duties in San Juan about April 1.

A well known specialist in bacteriology and epidemiology, Dr. Martin has conducted numerous studies on fungous diseases and has written more than thirty scientific articles and books on various aspects of bacteriology and mycology.

News Notes from the Bowman Gray School of Medicine of Wake Forest College

Dr. Maxwell Finland of Boston, associate professor of medicine at Harvard Medical School, spoke to the medical school staff and students on February 9, discussing his clinical and laboratory studies on the newer antibiotic drugs.

* * * *

Dr. Wingate M. Johnson, professor of clinical medicine, and Dr. George T. Harrell, Jr., professor of internal medicine, were among the speakers for the fifty-first annual meeting of the Tri-State Medical Association in Fayetteville on February 20 and 21. Dr. Johnson spoke on "General Practice and Its Assets," and Dr. Harrell spoke on "Drug Resistance Developed by Bacteria" in a session devoted to discussion of the present status of antibiotics.

* * * *

Dr. Harry C. Solomon, professor of psychiatry at Harvard University and director of the Boston Psychopathic Hospital, was a recent visitor at clinics and classes conducted at the medical school and Graylyn.

* * * *

Dr. George Harrell discussed "Circulatory Failure in Acute Infections" at the meeting of the Duval County Medical Society in Jacksonville, Florida, on March 7.

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"Evaluation of Peripheral Circulation in Man" was the subject of a paper by Drs. Harold D. Green, C. F. McFall, Richard Pollitzer, and M. Moore which was presented at the meeting of the Southern Society for Clinical Research in New Orleans on March 17 and 18. Dr. Green, a member of the executive council, attended a meeting of that group prior to the general meeting.

* * * *

Dr. Robert B. Lawson, former associate professor of pediatrics, has been promoted to the position of professor of pediatrics and director of the department. Dr. Leroy J. Butler will retain the title of professor of pediatrics but has asked to be relieved of administrative duties.

Dr. Eben Alexander, Jr., has been promoted from instructor in surgery to assistant professor of surgery in charge of neurosurgery. Both he and Dr. Lawson are graduates of the Harvard Medical School.

Dr. George E. Bradford, formerly assistant in clinical otolaryngology, has been named assistant professor of otolaryngology.

Dr. Robert J. Andrews, graduate of Western Reserve University, has been named visiting professor of radiology and radiologist for the Baptist Hospital. Dr. James F. Martin, now an instructor in radiology at Western Reserve, has been named assistant professor of radiology.

Dr. Fleetus L. Gobble, a graduate of the Bowman Gray School of Medicine, has been appointed assistant in clinical obstetrics and gynecology.

Dr. Patrick H. Tooley of London, England, has been named visiting professor of neuropsychiatry.

North Carolina Mental Hygiene Society

With the establishment of a central office in Room 520, Education Building, Raleigh, the North Carolina Mental Hygiene Society is in a position to give increasing services throughout the state. Communications should be addressed to Elsie L. Parker, Executive Secretary.

News Notes from the North Carolina Tuberculosis Association

Dr. P. A. Yoder has resigned as supervisor and medical director of the Forsyth County Tuberculosis Sanatorium, and Mrs. Evelyn Yoder, his wife, has resigned as business manager and personnel supervisor of the institution.

Dr. Yoder said he was resigning because of ill health and a "delayed" convalescence, and Mrs. Yoder does not think she should continue her present duties because of "my husband's prolonged illness."

* * * *

The office of the North Carolina Tuberculosis Association was moved to the State Capital Life Insurance Building, 2620 Hillsboro Street, Raleigh, on March 1. The Association has had its headquarters in the Commercial Building at the corner of East Martin and South Wilmington Streets for the past seven years.

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Plans for the addition of space for 600 more beds at the three North Carolina State Sanatoriums for the treatment of tuberculosis, and a new 100 bed Sanatorium at Chapel Hill, are well under way, according to a statement by Dr. H. Stuart Willis, superintendent and medical director of the institutions. The building program was authorized by the 1949 General Assembly for the purpose of providing adequate facilities for the treatment of the many sufferers from the disease that are not hospitalized because of present crowded conditions. The sanatoriums are located at Wilson, McCain, and Black Mountain.

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Dr. James E. Perkins, managing director of the National Tuberculosis Association, has accepted an invitation to attend the NCTA annual meeting to be held in Durham, May 22-23.

* * * *

April 2-9, 1950 has been designated National Negro Health Week. The special objective for the year 1950 is **Evaluation Anniversary of the National Negro Health Week Program.**

The preliminary Health Week Bulletin to assist community organizations in the planning of activities, the official Health Week poster and school leaflet may be secured from the National Negro Health Week Committee, Public Health Service, Federal Security Agency, Washington 25, D. C.

Help in planning and conducting the week's activities may also be secured from the State Tuberculosis Association.

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At a recent meeting of the American Trudeau Society, the Medical Section of the National Tuberculosis Association, it was recommended that commercial firms be licensed under the National Institutes of Health to produce BCG vaccine, as soon as suitable standards can be perfected. It also emphasized its 1948 statement that BCG does not furnish complete protection and that further basic research is needed on the problem of artificial immunization against tuberculosis. BCG vaccination is recommended particularly for vulnerable groups such as doctors, nurses, laboratory personnel, and others subject to unusual exposure to the disease.

News Notes from the State Board of Health

The State Board of Health met in Raleigh the first week in February and gave its unanimous approval to a reorganization plan submitted by a committee of which Dr. J. W. R. Norton, State Health Officer, was chairman. The plan adopted does not replace any personnel. It simply regroups existing units with regard to their relation to each other. This streamlining of the State Health Department reduces the number of major divisions from fourteen to seven. The new divisions, together with their directors, are as follows:

Personal Health, in charge of Dr. George M. Cooper, includes maternal and child health activities, services to crippled children, nutrition, cancer, and heart diseases.

The Local Units Division, of which Dr. C. C. Applewhite is the director, will concern itself with joint planning, consultation, health nursing, health education, mental hygiene, and school health.

The Division of Epidemiology is directed by Dr. Charles P. Stevick, formerly director of both this division and the Vital Statistics Bureau. The new Epidemiology Division will concern itself with public health statistics, including reports of births, deaths, and communicable diseases, immunization, venereal disease control, tuberculosis control, industrial hygiene, and accident prevention.

Mr. J. M. Jarrett continues as director of the **Sanitation Division,** in which there is very little change, except that insect and rodent control activities have now been placed in this division. Other activities in the Sanitation Division include environmental sanitation, inspection of public eating places, milk sanitation, stream pollution, shell fish, and bedding inspection.

The State Laboratory of Hygiene remains as it was, under the direction of Dr. John H. Hamilton. It is concerned with biologics, microscopy, cultures, serology, water analyses, chemistry, and approved laboratories throughout the state.

The Oral Hygiene Division, of which Dr. Ernest A. Branch is director, will continue its activities in mouth health, affecting the school children of the state.

The head of the State Public Health Department is, of course, the State Health Officer, Dr. J. W. R. Norton. The functions of the **Division of Central Administration** remain practically as they were before reorganization.

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During the present fiscal year, the budget for local health work in North Carolina totals $4,372,629, derived from the following sources: state, $1,150,000; Federal, $529,383; local, $2,693,246. The people in the "grass roots" are raising more money locally than comes from both state and federal funds combined.

* * * *

Harnett County, North Carolina, has begun writing what might well be termed a new chapter in Public Health history. The multiphasic screening program recently launched there bids fair to spearhead a war on diabetes, from a county public health department standpoint, which might conceivably spread throughout the nation. The series of clinics which began at the Dunn Health Center on February 1, and will move into Lillington toward the end of the month, also includes mass screening for both tuberculosis and diabetes.

The five-minute blood sugar screening test in use in Harnett was developed by Dr. Hugh I. C. Wilkerson, Chief of the Diabetes Branch, Division of Chronic Disease, U. S. Public Health Service. The mobile unit was loaned to Harnett, upon request,

by the Public Health Service. The test literally is run in five minutes.

As in all other public health detection clinics, those showing positive results are referred to their personal physicians for advice and treatment. The processing apparatus is capable of making 120 tests an hour to determine the blood sugar level of the examinee and the possible presence of diabetes in the early stages.

State Board of Medical Examiners

The North Carolina Board of Medical Examiners will meet on May 1, 1950, at the Carolina Hotel in Pinehurst, for the purpose of interviewing applicants for licensure by endorsement of credentials.

The board will hold its annual written examination at the Sir Walter Hotel in Raleigh, June 19-22, 1950. Applicants for licensure by endorsements will be interviewed on June 19.

Duke University Medical Alumni Luncheon

The Duke Medical Alumni Luncheon during the meeting of The Medical Society of the State of North Carolina will be held on Tuesday, May 2, at 1 p.m., at The Manor, Pinehurst. The fee is $2.75 per plate, tip included. Bus service will be available from The Carolina Hotel for those requiring it.

Tentative reservations should be sent to Talmage L. Peele. M.D., Duke Hospital, Durham, N. C., as soon as convenient.

The Brodie C. Nalle Lecture

The Staff of The Nalle Clinic in Charlotte has set up a Foundation to receive gifts to be used for medical research, medical education, and medical charity. Some of the associates of Dr. Brodie C. Nalle started a fund within the Foundation to be known as the Brodie C. Nalle Fund, the income from which was to be used for the advancement of the specialty of obstetrics and gynecology. The Board of Control of the Foundation decided to use the income from this fund to present noted physicians specializing in obstetrics and gynecology in lectures and clinics in Charlotte.

Dr. Emil Novak of Baltimore has been secured by the Board to give the first of these lectures. This will be presented in the Civic Room of the Hotel Charlotte at 8 p.m. on Friday, April 14, 1950. His subject will be "Indications, Limitations, and Hazards of Endocrine Therapy in Gynecology."

Members of the medical profession are cordially invited to attend.

Periodical Microfilm Service

The **North Carolina Medical Journal** has entered into an agreement with University Microfilms, Ann Arbor, Michigan, to make available to libraries issues of the **Journal** in microfilm form.

Under the plan, the library keeps the printed issues unbound, and circulates them in that form for two to three years. When the paper copies begin to wear out or are not called for frequently, they are disposed of and the microfilm is substituted.

Sales are restricted to those subscribing to the paper edition, and the film copy is distributed only at the end of the volume year.

The microfilm is in the form of positive microfilm, and is furnished on metal reels, suitably labeled. Inquiries concerning purchase should be directed to University Microfilms, 313 N. First Street, Ann Arbor, Michigan.

North Carolina Surgical Association

The spring meeting of the North Carolina Surgical Association was held at Mid-Pines, Southern Pines, North Carolina, on Saturday, March 4, 1950.

The scientific program consisted of two round table discussions:

1. The Surgical Treatment of Cancer of the Breast.
2. The Use of Antibiotics in Surgery.

(BULLETIN BOARD CONTINUED ON PAGE 164)

Classified Advertisements

PHYSICIAN WANTED FOR EYE, EAR, NOSE, AND THROAT WORK

Associate wanted in an established eye, ear, nose and throat practice of long standing in excellent eastern North Carolina city. Direct replies to P. O. Box 1606, Raleigh, North Carolina.

ELECTROCARDIOGRAPH FOR SALE

FOR SALE: 1941 model "Simpli-Trol" Cambridge Electrocardiograph. Excellent Condition. $300.00.

Address "GH"
P. O. Box 456
Winston-Salem, N. C.

PHYSICIAN WANTED

Dr. S. P. Watson, an eye, ear, nose, and throat specialist in New Bern, N. C., wishes to retire from active practice and would like to have a younger man come in with him or take over his office.

LOCUM TENENS WANTED

Locum tenens wanted for general practice: June 10 to July 15, 1950. Remuneration $75 weekly and 50% of receipts. Write J. E. Wright, M.D., Box 157, Macclesfield, North Carolina.

PHYSICIAN WANTED

WANTED: Young physician for town of approximately 2,000 in eastern North Carolina. Office furnished.

Write Mr. W. A. Bracey, Sr., Mayor,
Fair Bluff, N. C.

SMALL HOTEL for CONVALESCENCE and REST. Quiet, restful, fine food and water, large pine grove. Surrounded by golf course. Patronage of doctors desired. Three miles south Raleigh, accessible, paved roads.

Information and credentials furnished.
COLONIAL PINES HOTEL, RALEIGH, N. C.

AUXILIARY

LEGISLATION OF INTEREST

The legislation in Congressional hoppers needs watching! We should not be lulled into a false sense of security. The American Medical Association's educational campaign and an awakened public— a great many of whom seem not willing to follow the road of the social planners—have, *for the moment*, put a stop to the passage of the "National Health Insurance and Public Health Act" S-1679.

Mr. Dingell recently stated they would pass his program, a section at a time. Let us consider one of these "sections," now before our legislators. "The Emergency Professional Health Training Act of 1949"—S-1453, H. R. 5940.

It has passed the Senate, and since has been found to contain several objectionable provisions. The companion bill, H. R. 5940, has already been reported and is before the Rules Committee of the House Interstate and Foreign Commerce Committee. Meetings have been held but there is, to date, no definite word concerning the committee's acceptance of changes recommended by the A.M.A., chiefly aimed at reducing federal control of medical education.

The fact is: This bill, with some minor changes, has been lifted from S-1679. It is found there under Title I—"Education of Health Personnel." This might have escaped the notice of many who strongly opposed the various Murray-Wagner-Dingell bills. Some of the objectionable features are:

1. The provision for offering $1000 for each student in a *new* medical school, while limiting the number of students for whom the higher payment would be made to 30 per cent of the average enrollment in established schools, unduly and unfairly favors new schools over established schools in the matter of federal aid.

2. The Surgeon General may make grants for construction of new schools and improvement and expansion of existing facilities, as he sees fit. The A.M.A. feels that the needs of all medical schools should be surveyed, and a balanced long-range program developed before grants are forthcoming. Political pressure and interference might go hand in hand with the full authority invested in the Surgeon General.

3. The National Council on Education for Health Professions is given the sweeping authority to:

Investigate medical schools

Determine their capacity to maintain and expand student enrollments

Establish a uniform method of calculating the costs of instruction

Determine the extent to which equal opportunity is afforded all properly qualified students.

How can all this be done without interfering with the administrative policies of medical schools?

4. Provision is made for scholarships, controlled by federal funds; innocent though this may sound, it *could* be the basis for pressure on admission committees for political selection of unqualified students, or even to continue the education of failing students with such political scholarships.

S-1411 — "The National School Health Services Act of 1949"—also is regarded as a bill to which we should voice our opposition. The general principle that the federal government controls, at the community level, that which it subsidizes, is reason enough for disapproval. Here are a few more reasons:

1. If state law prohibits expenditure of funds for private schools, this bill allows the Federal Security Administrator to bypass state officials and to withhold funds from the state allotment; such funds are to be used to provide the same services in private schools as in public schools within the state.

2. Medical and dental examinations for *all children* between the ages of 5 and 17 (inclusive) attending school are compulsory. Treatment for physical and mental defects discovered, regardless of ability to pay, is provided.

It is obvious that this legislation lays the groundwork for socialization of the medical care of a large part of our population. No mention is made of "follow up" services, the family physician, where treatment would be carried out, and by whom.

H. R. 6000—"Amendments to the Social Security Act"—is a bill to which we would do well to give some serious thought and vigorous action. It has passed the House and is pending before the Senate Finance Committee.

Thirty-five million are under the program, 11 million more are to be included.

Taxes would increase and multiply.

Service programs of public assistance would be liberalized.

The bill initiates a federal disability program, which would no doubt mean an increase in malingerers.

It authorizes eye examinations by optometrists in determining aid for indigent blind, these being put in the category of medical care, which naturally would include diagnosis and treatment of pathologic conditions, as well as sight correction. The former service the optometrist is not trained to give.

If we are realistic, the pattern for the future is all too plainly seen. Are we going to sit by and see our American way of life dissolve into Nationalism? Not if we are alert, well informed, and *vocal*. Write to your legislators, make yourself heard, your influence felt, your resistance active—not passive!

MRS. POWELL G. FOX, Raleigh
State Legislative Chairman

TWENTY-SEVENTH ANNUAL MEETING OF THE AUXILIARY TO THE MEDICAL SOCIETY OF THE STATE OF NORTH CAROLINA

RULES AND PROCEDURE

1. Register on arrival and receive badge—$2.00 for all who do not present current membership card (fifty cents for Auxiliary expenses, fifty cents for upkeep of Sanatoria beds — all three now occupied by doctors—and one dollar for Auxiliary to A.M.A. dues).
2. Register also for Monday P.M. tour and Wednesday A.M. card party.
3. Tuesday, 9:00-11:00 A.M. Secure Country Club luncheon tickets at **Medical Society Registration Desk.** PLEASE NOTE: All registered at Carolina Hotel exchange hotel luncheon tickets for Country Club tickets; all registered at Holly Inn get transfers at Holly Inn Desk and exchange them for Country Club luncheon tickets; all others purchase tickets at $2.25. Only 200 can be accommodated, so first come first served. No tipping necessary.

PROGRAM

Monday, May 1

2:30 P.M.—Cars in front of Carolina for tour of Pinehurst and Southern Pines with tea at the home of Mrs. W. F. Hollister
Mrs. W. F. Hollister, Chairman

8:00 P.M.—Executive Board Meeting (Card Room)

8:30 P.M.—Bingo Party (Pine Room)—Fifty cents per card. Any money left after expenses will be divided among the Sanatoria Beds Endowment Funds. Men welcome.
Mrs. George Heinitsh, Chairman

Tuesday, May 2

10:00 A.M.—Annual Meeting—Pine Room.

1:00 P.M.—Luncheon—Country Club. Buses will leave Carolina at 12:30. ONLY those having luncheon tickets obtained at Registration Desk (see Rule 3 above) can attend. Others may come to the Club at 2:00 to see the fashion show.
Mesdames M. T. Pishkoe and Malcolm Kemp, Co-Chairmen

7:00 P.M.—President's Dinner

Wednesday, May 3

10:00 A.M.—Bridge and Canasta Party (Card Room)
Mrs. R. M. McMillan, Chairman

BOOK REVIEWS

Electrocardiography — Fundamentals and Clinical Application. By Louis Wolff, M.D., Visiting Physician, Consultant in Cardiology and Chief of the Electrocardiographic Laboratory, Beth Israel Hospital; Associate in Medicine, Harvard Medical School. 187 pages with 110 figures. Price, $4.50. Philadelphia and London: W. B. Saunders Company, 1950.

In his preface the author states that his purpose in writing a new text on electrocardiography is to teach the basic principles of the science without referring to patterns, as is done in the standard texts on the subject. To accomplish this purpose, Dr. Wolff starts with a discussion, brief and lucid, of the fundamentals—dipoles, depolarization, electrical properties of membranes, and volume conductors. Then he proceeds to discuss the anatomy and physiology of the heart in relation to the electrical impulses it produces, vector summation, repolarization, and primary and secondary T wave changes. The book describes well the variations seen in the precordial leads, the unipolar limb leads, and the standard leads, with minimal emphasis on the latter.

The chapters on bundle branch block and ventricular hypertrophy, left and right, are particularly good. They point out the cautions one should use in making these diagnoses, especially if one does not have the chest leads and the unipolar limb leads. The criteria for determining the position of the heart are well outlined, and its relation to axis deviation and the significance of the latter are discussed. A chapter on myocardial infarction in the presence of bundle branch block is filled with fine diagnostic points. The electrocardiographic changes in ventricular aneurysms, pericarditis, pulmonary embolism, and the Wolff-Parkinson-White syndrome are masterfully described.

This book is probably too technical for most beginners in electrocardiograpny, unless one is already a master of the sciences of physics and physiology. For the average internist who already understands something of the fundamentals and has looked at many records, this book will prove very stimulating. It is highly recommended to such physicians.

The Blakiston Company, medical and scientific affiliate of Doubleday & Company, Inc., announces that Dr. Morris Fishbein, formerly editor of the **Journal of the American Medical Association**, became Consultant Medical Editor for both The Blakiston Company and Doubleday & Company, Inc., on December 1, 1949.

Medical State Board Questions and Answers. By R. Max Goepp, M.D., Formerly Professor of Clinical Medicine, Graduate School of the University of Pennsylvania, and Professor of Medicine, Woman's Medical College of Pennsylvania; and Harrison F. Flippin, M.D., Associate Professor of Medicine at the Graduate School of the University of Pennsylvania. Ed. 8. 663 pages. Price, $7.00. Philadelphia and London: W. B. Saunders Company, 1950.

The eighth edition of this book conforms with the early policy of the editor as expressed in the preface to the third edition, published in 1913—namely, "the addition of a number of questions bearing on certain subjects which have assumed importance during the last few years." At that time it was serum and bacteria therapy, tropical disorders, and the newer cardiac physiology that required the additions, while now it is the new drugs and new therapeutic procedures. Psychiatry is included for the first time.

The size is handy, the type legible, and the content useful.

BULLETIN BOARD

(CONTINUED FROM PAGE 161)

CARTERET COUNTY MEDICAL SOCIETY

The regular monthly meeting of the Carteret County Medical Society was held February 13 at the Morehead City Hospital. It was a dinner meeting, the hospital acting as host.

The scientific session consisted of an address by Dr. F. W. Harb, in charge of the Eastern Medical Center in Durham. His subject was "The Physicians' Responsibility in Diagnosis and Management of Syphilis."

Dr. S. W. Thompson of Morehead City, president of the Second District Medical Society, discussed the coming meeting of the society, when the Carteret County Medical Society will act as host. The meeting date has not been set, but it will probably be held in May.

Dr. S. W. Hatcher, president, presided.

N. Thomas Ennett, M.D.
Corresponding Secretary

AMERICAN COLLEGE OF CHEST PHYSICIANS

Prize Essay Award

The Board of Regents of the American College of Chest Physicians offers a cash prize award of $250.00 to be given annually for the best original contribution, preferably by a young investigator, on any phase relating to chest disease.

The prize is open to contestants of foreign countries as well as to those residing in the United States. The winning contribution will be selected by a board of impartial judges and the first award will be made at the forthcoming annual meeting of the College to be held in San Francisco, June 22-25, 1950.

The following conditions must be observed:

1. Five copies of the manuscript, typewritten in English, should be submitted to the office of the American College of Chest Physicians not later than May 1, 1950.

2. The only means of identification of the author or authors shall be a motto or other device on the title page and a sealed envelope, bearing the same motto on the outside, enclosing the name of the author or authors.

Additional information may be obtained from the Executive Secretary of the College, 500 North Dearborn Street, Chicago 10, Illinois.

VETERANS ADMINISTRATION

Veterans Administration has announced that a reduction in force of approximately 7,800 jobs will be made primarily in order to bring personnel within the provisions of the V-A budget as submitted to the Congress for the fiscal year 1951.

The reduction in force also is prompted at this time to offset in part a shortage in salary funds for the balance of the fiscal year 1950.

The reduction will be nationwide and will include all activities of the Veterans Administration. Some 3,000 employees in hospitals and homes and 4,000 in other activities will be included.

* * * *

After three years of scientifically controlled testing and development, Veterans Administration is making the suction socket artificial leg available to eligible veterans who have suffered leg amputations above the knee of a character which makes its use medically feasible.

During the past two years more than 500 amputee veterans have been tested in the experimental program on the suction socket leg. Successful results were obtained in a great majority of the cases.

This above-knee artificial leg differs from the conventional artificial leg in that it has no pelvic hinges or suspension harness. The leg is held to the stump by moderate suction created in the closed socket each time the leg is lifted from the ground in walking.

The suction socket leg is designed to give greater freedom of movement in all directions, appears more like part of the body and does away with the discomfort of the pelvic belt (a heavy belt with steel hinge fitted to the waist).

V-A emphasized that no suction socket legs will be furnished to veterans without prior examination of the stump by a surgeon on the V-A certification list and a written prescription signed by the examining physician.

Amputee veterans who are eligible for a new artificial leg may obtain complete information about the suction socket leg from the Prosthetic and Sensory Aids Unit of the nearest V-A Regional Office.

Schering Award

Isaac Lewin, medical student in his final year at the University of Pennsylvania School of Medicine, Philadelphia, Pennsylvania, has been announced as the recipient of "The Schering Award for 1949." Dr. Edward H. Henderson, Schering's Director of Clinical Research, and Dr. Norman L. Heminway, chairman of the Schering Award Committee, presented the first prize of $1000 to Mr. Lewin for his paper on "The Metabolic Effects of the Steroid Hormones."

Co-authors B. Cuthbert Arthur and Ira E. Bailie, both third year students at the College of Medical Evangelists, were awarded the second prize of $500. Mortimer Lipsett, third year student at the University of Southern California School of Medicine, and Dr. Lester Rice, a senior at Temple University School of Medicine, were tied for third prize and were awarded duplicate prizes of $300 each by the judges. Twenty-four contestants received "honorable mention," and each will receive as a special award a Tycos sphygmomanometer in a leather case.

"The Schering Award" is given annually for the best manuscripts prepared on a designated phase of endocrinology. Medical students of the United States and Canada are eligible for the contest. The currently important problem fascinating medical research workers today, "The Clinical Use of Steroid Hormones in Cancer," will be the subject of "The Schering Award for 1950."

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Specifications:

- Cabinet: Made of heavy gauge steel. Standard finish is white baked enamel. All finishes are high gloss, very hard and easily cleaned. Chrome handle on door is easily locked if necessary.
- Refrigerating Unit: Standard construction, hermetically sealed unit requires no attention. A ninth horsepower Tecumseh sealed unit is placed on a track in the bottom rear of the box for easy removal. Operates on 110 volt, 60 cycle alternating current.
- Thermostatic Control: Easily adjustable, placed directly alongside the evaporator plate.
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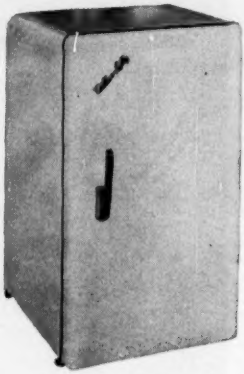

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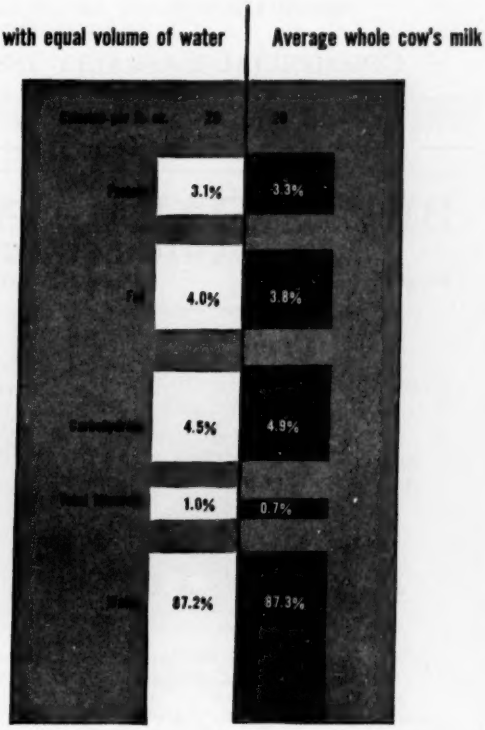

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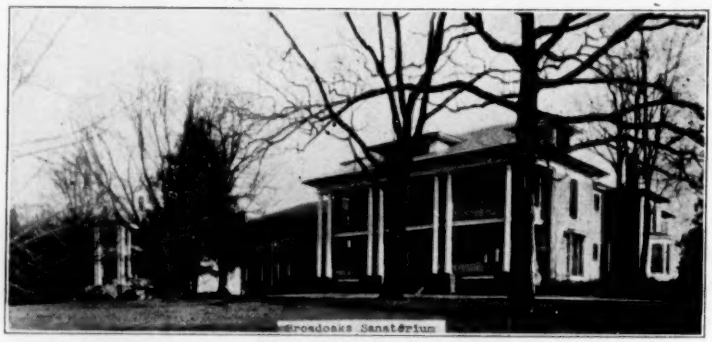

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* Hamblen, E. C.: Some Aspects of Sex Endocrinology in General Practice, North Carolina M. J. 7:533 (Oct.) 1946.

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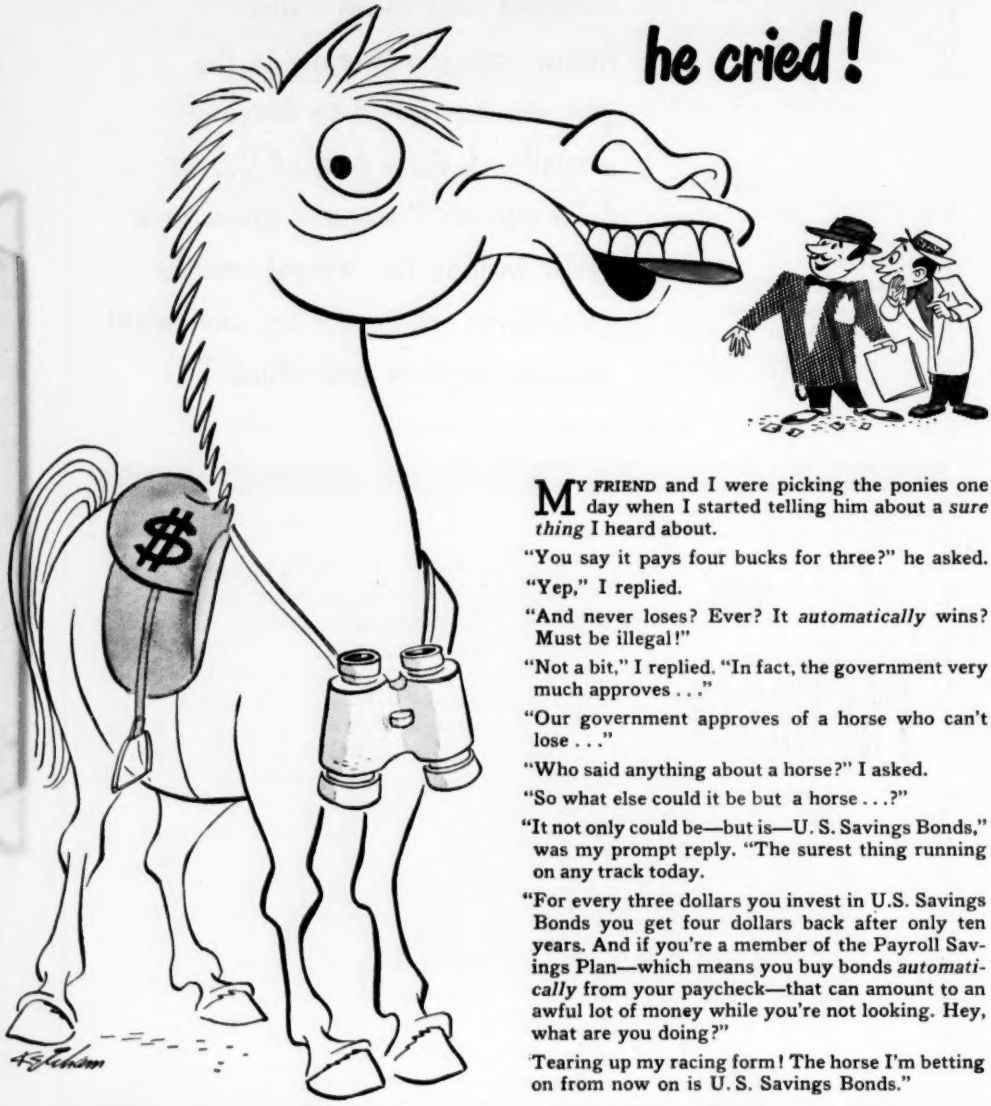

MY FRIEND and I were picking the ponies one day when I started telling him about a *sure thing* I heard about.

"You say it pays four bucks for three?" he asked.

"Yep," I replied.

"And never loses? Ever? It *automatically* wins? Must be illegal!"

"Not a bit," I replied. "In fact, the government very much approves . . ."

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"Who said anything about a horse?" I asked.

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1. *Withering, W.:* An account of the Foxglove, London, 1785.
2. *Rimmerman, A. B.:* Digilanid and the Therapy of Congestive Heart Disease, Am. J. M. Sc. *209:* 33-41 (Jan.) 1945.

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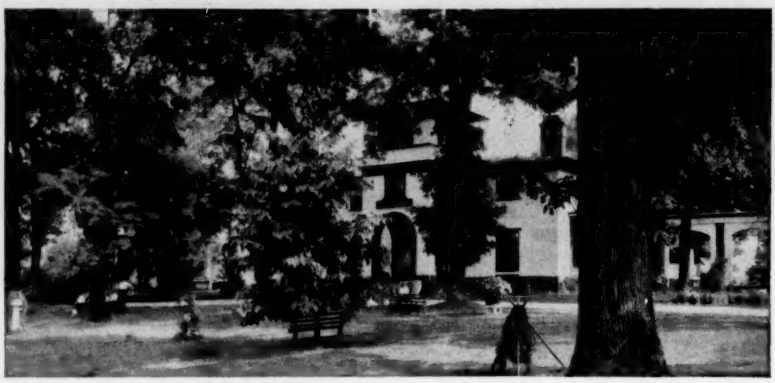

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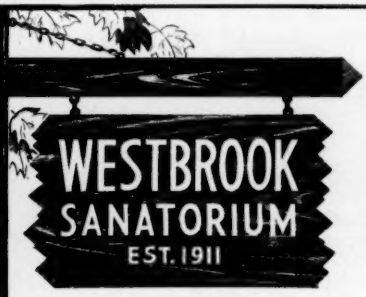

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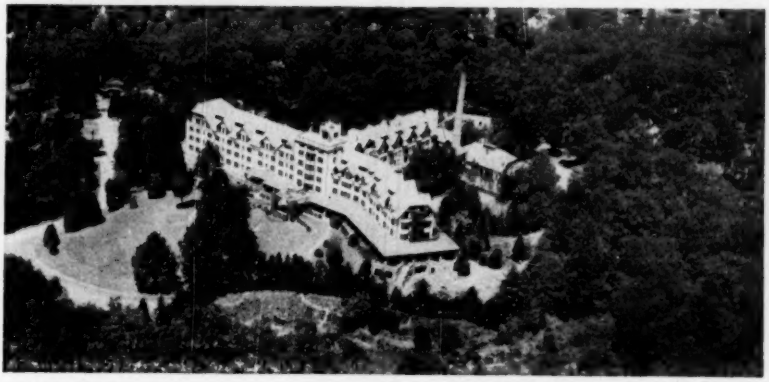

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Bacteriology:
Forrest Spindle

Director:
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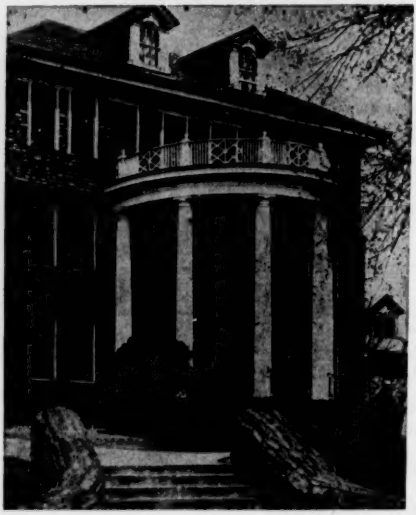

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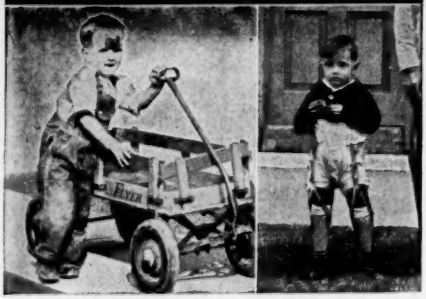

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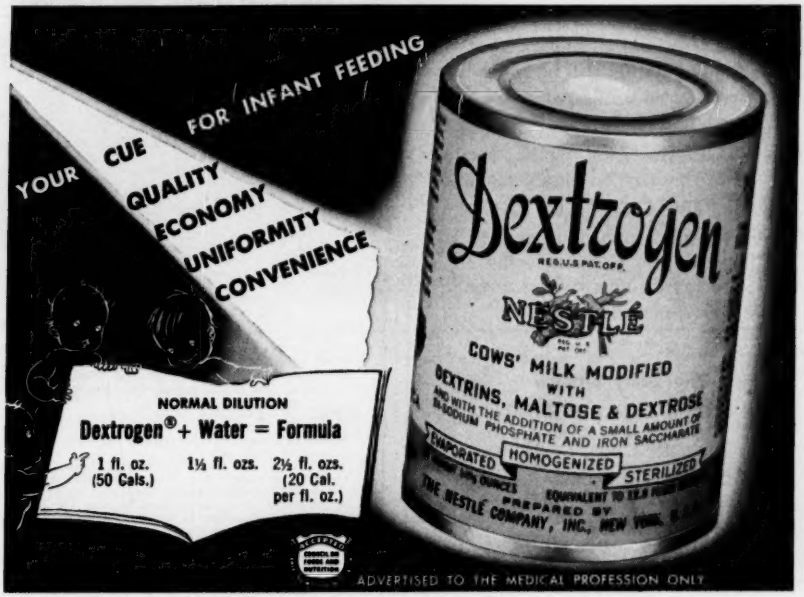

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Personal Course in General Surgery, two weeks, starting April 17.
Surgery of Colon and Rectum, one week, starting April 10, May 15.
Esophageal Surgery, one week, starting June 5.
Breast & Thyroid Surgery, one week, starting June 26.
Thoracic Surgery, one week, starting June 12.
Gallbladder Surgery, ten hours, starting April 24.
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Superintendent

Fellow of the American Psychiatric Association

INDEX TO ADVERTISERS

Abbott Laboratories XVIII
American Meat Institute X
Appalachian Hall XXIX
Ayerst, McKenna & Harrison XXIII
The Baltimore Clinic XXX
Bilhuber-Knoll Corp. XXVII
Borden Company XXI
Brawner's Sanitarium XXXIV
Broadoaks Sanatorium XXII
Broad Street Sanitarium III
Carolina Surgical Supply Company XXIX
Coca-Cola Company XXVI
Cook County Graduate School of Medicine XXXIV
J. L. Crumpton XXII
Dairy Council of North Carolina XXXIV
Eaton Laboratories XV
C. B. Fleet Company XVII
Glenwood Park Sanitarium XX
J. E. Hanger XXXII
Highland Hospital XXXII
Holland-Rantos Company IV
Hoye's Sanitarium XXXV
Inter Ocean Casualty Company XXXI
Keeley Institute XXVI
Lauer Metal Shop XXXIV
Lederle Laboratories ..... 2nd Cover
Eli Lilly and Company ..... Insert-Front Cover
Luziers, Inc. XIV
Mead Johnson & Company ..... 4th Cover
Merck & Company VI
The Nestle Company XXXIII
Neuse Forest Home XXV
North Carolina Medical Journal XXVIII
Parke, Davis and Company ..... XXXVI-3rd Cover
Philip Morris and Company XII
Physicians Casualty Association
Physicians Health Association XXXII
Picker X-Ray Corp. VII
Pinebluff Sanitarium I
Powers and Anderson XX
R. J. Reynolds Tobacco Company V
Saint Albans Sanatorium XXXIII
Sandoz Pharmaceuticals, Inc. XXV
Schering Corp. IX
G. D. Searle & Company XIX
Stuart Circle Hospital XXXI
Thompson Homestead School XXXIV
Tucker Hospital XXX
U. S. Government Bonds XXIV
Wachtel's, Inc. XXX
Westbrook Sanatorium XXVII
White Cross Hospital XVI
Winchester Surgical Supply Company
Winchester-Ritch Surgical Company I
Winthrop-Stearns, Inc. XIII
Wyeth, Inc. XI

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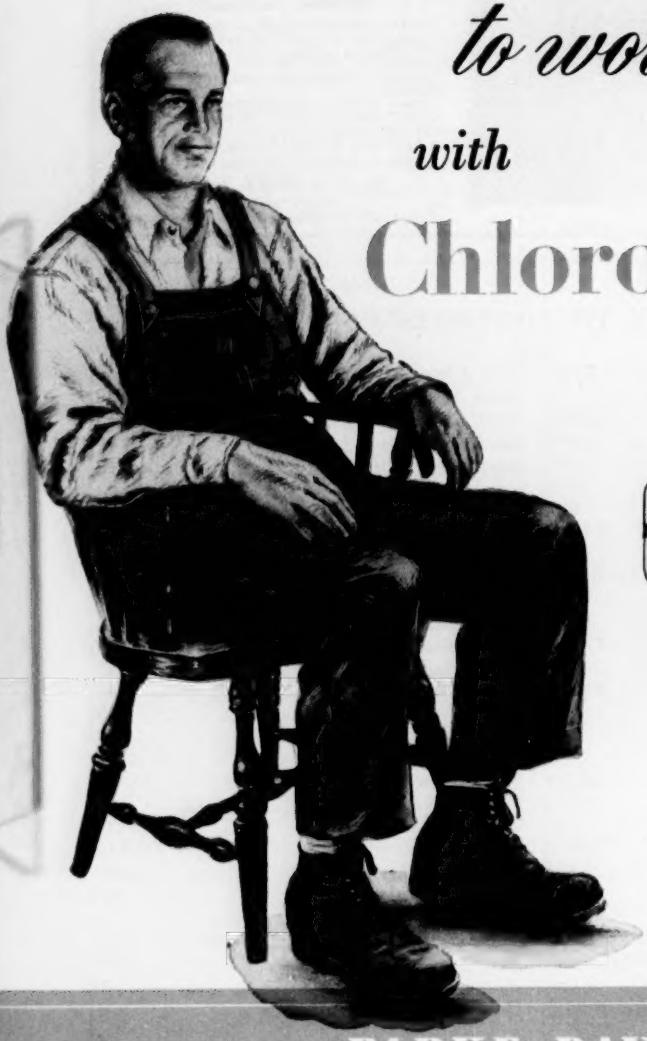

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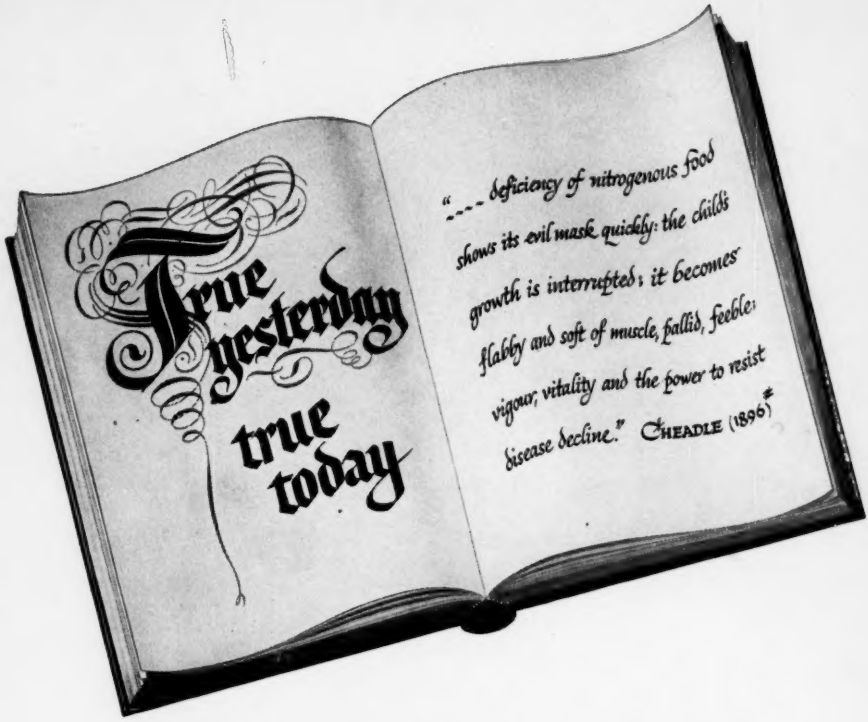
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#Cheadle, W. B.: Artificial Feeding of Infants, 1896; Cited by Clements, A. D.: M. J. Australia 2:404, 1946.

*T. M. Reg. U. S. Pat. Off.